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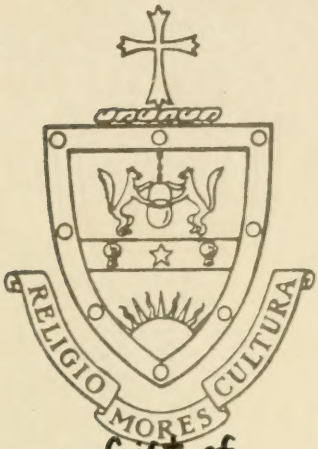

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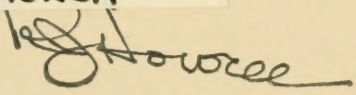

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REPORTS

OF THE

INSPECTORS OF MINES

OF THE

Anthracite and Bituminous Coal Regions of Pennsylvania,

FOR THE YEAR 1890.

HARRISBURG:
EDWIN K. MEYERS, STATE PRINTER
1891.

VIRTUE
LIBERTY AND
INDEPENDENCE

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REPORTS

OF THE

INSPECTORS OF MINES.

COMMUNICATION.

DEPARTMENT OF INTERNAL AFFAIRS,
HARRISBURG, *August 1, 1890.*

To His Excellency ROBERT E. PATTISON,
Governor of Pennsylvania:

SIR: In compliance with the requirements of the acts of June 30, 1885, relative to the Mine Inspectors' Reports of the Anthracite and Bituminous Coal Regions, and under the provisions of the act approved April 23, 1889, I have the honor to present you herewith, for transmission to the General Assembly, the Reports of the Inspectors of Mines for the Coal Regions of this Commonwealth for the year 1890.

Very respectfully yours,
THOS. J. STEWART,
Secretary of Internal Affairs.

DISTRICTS.	NUMBER OF TONS OF COAL PRODUCED.				NUMBER OF MINERS EMPLOYED.				NUMBER OF MINERS' LABORERS EMPLOYED.			
	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.
Anthracite.												
First district	8,932,235	8,621,980	9,881,878	8,527,768	6,214	6,149	6,271	5,973	5,030	5,165	4,925	4,226
Second district	5,229,027	4,666,891	5,435,537	5,043,516	3,673	3,721	3,627	3,297	3,112	3,595	3,241	2,926
Third district	6,907,708	7,330,123	8,684,493	7,540,754	4,089	4,427	4,637	4,472	4,166	4,370	4,734	4,496
Fourth district	5,776,699	5,655,187	4,892,514	3,961 594	2,924	2,685	2,984	3,125	1,632	1,788	1,416	3,124
Fifth district	6,236,554	5,220,464	5,375,185	5,396,445	4,933	4,682	4,345	3,729	2,229	1,621	1,797	1,291
Sixth district	4,428,972	4,353,868	4,710,014	4,737,622	5,413	5,628	4,735	5 029	1,779	1,858	1,401	1,634
Seventh district	2,579,160	3,125,435	2,687,362	2,436,299	1,690	3,164	2,386	. . . . .	672	1,021	759	. . . . .
Total	40,090,355	38,973,949	41,596,971	37,648,997	28,936	30,456	28,985	25,625	18,620	19,418	18,273	17,697
Bituminous.												
First district	3,788,041	2,557,931	2,313,957	1,549,601	5,035	5,270	4,355	3,097	399	412	452	394
Second district	6,975,879	6,915,171	6,228,117	5,435,923	6,666	6,143	5,918	5,394	*347	*394	*345	*400
Third district	2,835,899	2,665,017	1,893,844	2,138,738	3,983	3,737	3,093	3,267	. . . . .	. . . . .	*154	. . . . .
Fourth district	3,773,844	3,143,322	4,632,043	4,173,909	4,451	4,053	5,615	4,943	87	99	550	568
Fifth district	6,471,083	6,026,681	5,240,941	4,563,657	4,826	4,169	3,576	3,448	*169	*177	*172	*154
Sixth district	5,790,714	4,205,029	3,265,596	3,341,381	6,328	5,014	4,310	3,726	*472	*338	*326	*323
Seventh district	4,572,325	3,738,227	4,683,921	3,935,168	6,416	5,761	7,820	6,324	*429	*416	*384	371
Eighth district	6,532,736	5,373,676	5,513,860	4,829,017	6,665	6,364	5,833	5,659	*832	*753	569	599
Total	40,740,521	34,025,054	37,722,279	29,967,394	44,370	40,511	40,530	35,858	2,735	2,589	2,952	2,809
Grand total	80,830,876	72,999,003	79,319,250	67,616,351	73,306	70,967	69,515	61,481	21,355	22,007	21,225	20,506

* Miners' boys.

DISTRICTS.	OTHER EMPLOYES INSIDE THE MINES.				OUTSIDE EMPLOYES.				TOTAL EMPLOYES.			
	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.
Anthracite.												
First district	4,819	4,899	1,346	4,530	7,676	7,725	7,256	6,540	23,759	23,935	19,798	21,269
Second district	3,252	3,272	3,117	2,808	5,722	5,514	5,082	2,018	15,759	16,102	15,067	11,049
Third district	4,324	4,322	4,610	4,205	6,368	6,633	6,970	6,941	18,947	19,752	20,951	20,113
Fourth district	1,522	1,391	1,636	1,015	7,303	7,843	7,412	6,852	14,421	13,707	13,448	14,096
Fifth district	3,892	6,303	3,018	1,348	8,235	6,707	6,557	3,438	19,289	19,313	15,717	9,806
Sixth district	3,739	3,486	4,226	1,267	360	6,918	6,586	5,384	11,191	17,890	16,948	13,314
Seventh district	1,314	2,366	3,711	. . . . .	2,144	4,110	3,917	. . . . .	5,820	10,661	10,773	*8,207
Total	24,861	26,039	21,664	15,173	37,808	45,450	43,780	31,153	109,166	121,359	112,702	97,854
Bituminous.												
First district	448	172	195	1,291	580	605	457	436	6,462	6,459	5,459	5,218
Second district	1,474	1,256	1,521	1,264	3,277	3,010	2,794	2,684	11,758	10,803	10,778	9,742
Third district	757	679	348	548	702	561	545	521	5,442	4,977	4,140	4,336
Fourth district	946	695	937	678	954	919	1,207	1,069	6,438	5,766	8,309	7,258
Fifth district	1,451	1,220	1,017	1,267	3,890	3,822	3,224	3,313	10,336	9,388	7,989	8,182
Sixth district	1,242	913	950	838	1,782	1,626	1,287	1,191	9,824	7,891	6,873	6,078
Seventh district	792	644	3,281	1,725	719	681	879	838	8,356	7,502	12,964	9,258
Eighth district	988	1,069	1,315	815	736	642	618	633	9,121	8,788	8,335	7,706
Total	8,098	6,648	9,564	8,426	12,640	11,866	11,011	10,685	67,737	61,574	64,847	57,878
Grand total	32,959	32,687	31,228	23,599	50,448	57,316	54,791	41,838	176,903	182,933	177,549	155,732

* Employes were not classed in this report.

Districts.	Number of Fatal Accidents.				Number of Non-Fatal Accidents.				Number of Wives made Widows.				Number of Orphans Left.			
	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.	1890.	1889.	1888.	1887.
Anthracite.																
First district	64	72	74	57	241	225	255	225	28	34	31	32	132	84	112	110
Second district	40	52	46	52	174	138	131	146	24	26	21	21	77	64	38	69
Third district	100	67	83	65	208	214	250	295	55	39	44	33	176	91	126	120
Fourth district	52	46	32	15	130	126	100	101	24	26	15	7	52	44	56	15
Fifth district	66	60	44	55	97	83	112	105	31	14	21	31	97	25	59	86
Sixth district	39	52	64	52	121	146	141	134	16	12	38	27	52	104	122	50
Seventh district	17	36	21	20	36	66	43	42	7	10	7	9	16	43	16	34
Total	378	385	364	316	1,007	998	1,032	1,048	185	161	177	160	602	455	429	484
Bituminous.																
First district	15	19	13	6	77	59	45	41	9	11	9	3	30	36	32	6
Second district	20	23	17	25	51	52	48	46	8	14	9	15	21	42	32	38
Third district	5	4	2	. . .	29	27	17	19	3	2	1	. . .	10	3	11	. . .
Fourth district	8	5	22	13	22	21	29	29	16	3	10	7	7	15	20	15
Fifth district	50	16	10	8	37	41	58	34	27	9	6	3	81	24	25	4
Sixth district	15	8	6	7	27	13	12	12	8	8	3	3	31	13	14	5
Seventh district	9	18	14	11	53	44	58	43	3	8	5	6	5	18	10	14
Eighth district	24	12	5	14	85	42	23	47	16	7	2	4	36	20	4	11
Total	146	105	29	84	381	297	290	271	90	62	45	41	211	171	148	193
Grand total	524	490	453	400	1,388	1,295	1,322	1,319	275	233	322	201	813	626	577	677

FIRST ANTHRACITE DISTRICT.

(LUZERNE AND SUSQUEHANNA COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
SCRANTON, PA., *April, 1891.*

HON. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: In compliance with article 2, section 7, of the anthracite mine laws of Pennsylvania, approved 30th day of June, 1885, I have the honor of herewith submitting to you my annual report as Inspector of mines of the First Anthracite coal district for the year 1890.

The accompanying tables in my report give the usual statistics, showing the condition of mine workings in detail.

The mines are in a good, safe and healthy condition. Ventilation is good except in a few of the smaller mines.

The examination of boilers by competent men is an actual necessity for the safety of employes working at or around breakers and shafts. If there should happen to be an explosion during working hours, it would endanger the lives of employes working in and about the place where the explosion occurs. In my last year's report I stated my opinion of how boilers ought to be examined and the qualification of the parties who examine said boilers.

There were three boiler explosions during the year 1890. On January 22, an explosion occurred at the Mount Jessup colliery, killing John Munly. On March 15, a nest of three boilers exploded at Simpson breaker, causing the death of four employes, Bert. Ross, John Ross, Richard Whithington and John Thomas, slate pickers in the breaker, who were in the boiler-house at the time of the explosion eating their dinners. These boilers were cleaned and examined and their condition reported according to law, but I cannot say whether the parties who examined the boilers were qualified or not.

There were seven employes killed by falling down shafts. I am sorry to say that it was caused by carelessness on the part of the victims themselves. If the employes, superintendents, outside and inside foremen and the other employes at the different colleries would live up to the mine laws and colliery rules it would reduce the number of accidents fully one-half.

SYNOPSIS OF REPORT FOR YEAR ENDING DECEMBER 31, 1890.

Number of mines in the district,	98
Average working time (in days) for sixty-eight breakers,	197.51
Number of miners employed,	6,214
Number of mine laborers employed,	5,030
Number of other persons employed in mines,	4,819
Total in mines,	16,063
Number of persons working outside at collieries,	7,676
Total number of employes,	23,739
Number of tons of coal produced in 1889,	8,621,980.16
Number of tons of coal produced in 1890,	8,932,235.07
Increase in production in 1890,	310,254.11
Number of tons of coal shipped in 1889,	7,872,602.05
Number of tons of coal shipped in 1890,	8,192,908.10
Increase in shipment in 1890,	320,306.05
Number of tons of coal consumed at mines in 1889,	551,572.15
Number of tons of coal used and consumed at mines in 1890,	523,827.00
Decrease in consumption in 1890,	27,745.15
Number of tons of coal sold for local consumption in 1889,	205,308.02
Number of tons of coal sold for local consumption in 1890,	215,499.17
Increase in local coal sales in 1890,	10,191.15
Number of tons of coal produced for each miner,	1,437.4
Number of tons of coal produced for each miner and laborer,	794.4
Number of tons of coal produced for each employe in mines,	556
Number of tons of coal produced for each employe at colleries,	376.3
Number of fatal accidents in 1890,	64
Number of tons of coal produced for each fatal accident,	139,566
Number of persons employed for each fatal accident,	372
Number of non-fatal accidents in 1890,	241
Number of tons of coal produced for each non-fatal accident,	37,063
Number of widows from accident at colleries,	28
Number of tons of coal produced for each widow,	319,008

Number of children left as orphans from accidents in 1890,	132
Number of tons of coal produced for each orphan,	67,669

There were 280,200 kegs of powder used in mining 8,932,235.07 tons of coal in 1890, which would give 31.88 tons of coal for each keg of powder used.

There are 2,753 horses and mules working in and about the mines in this district. There are also 34 mine locomotives with a horse-power of 1,799, making in all a total horse-power of 4,552 for transportation of coal in mines and between mines and breakers.

There are 905 steam boilers which supply steam for 385 hoisting, fan and breaker engines, which have a horse-power of 23,809; also 301 pumping engines and steam pumps with a horse-power 10,665.

There are 68 breakers which have a capacity for preparing and cleaning 53,045 tons of coal per day for shipment to market.

There are also 4 chute buildings for cleaning and dividing coal into various and different sizes, shipping some to market direct and some to breakers to be prepared for market.

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines.

COLLIERY IMPROVEMENTS FOR 1890.

Delaware, Lackawanna and Western Railroad Company, has made no improvements except driving headings and airways, so as to have their mines in proper condition for opening out their mine workings when necessary.

DELAWARE AND HUDSON CANAL COMPANY.

This company has made but very few improvements during the year.

Clinton Colliery.—Has finished one outside slope.

Eddy Creek Colliery.—Has built an addition to breaker for the purpose of making chestnut, pea and buckwheat coal.

Olyphant No. 2 Colliery.—Put in place one fan engine, 18″ x 22″; size of fan 17′ diameter by 4′ width of face, also placed three boilers 34′ long by 36″ in diameter.

Jermyn No. 3 Colliery.—Finished sinking air shaft to "G" or 14′ vein Machinery is on the ground but not put in place yet.

Capouse Colliery—Have finished one plane from "G" to Rock Vein.

Pine Brook Colliery.—Drove one slope in coal and one tunnel in rock.

Clifford Colliery.—Finished one plane in mines.

Erie Colliery.—Graded planes on west side of shaft from Bengough's heading through old chambers to Gilhool's heading.

Shaft No. 2, Forest City.—Finished plane in mines.

Glenwood No. 1 Shaft.—This shaft has been sunk through the "Grassy Island" to what is known as the Carbondale top vein, 60′ below the Grassy Island Vein. Permanent mining has not yet commenced.

Keystone Tunnel.—We are improving the breaker by enlarging it, also by putting in place one pair of rolls 26″x22″ and one pair 26″x12″, for the purpose of breaking coal down to small sizes. They will be in place January, 1891.

Elk Creek Mines.—Have sunk a shaft to third vein of coal.

Marshwood Mines.—Finished one inside plane

Ontario Mines.—Finished one inside plane 300′ long.

Pancoast Mines.—Finished rock tunnel and proved good coal.

Richmond No. 3.—Shaft down to the "G" vein of coal, they have not commenced opening out the mines yet. A breaker is in course of construction. They have not commenced to open up any of the veins of coal yet.

MT. JESSUP COAL COMPANY, LIMITED,
WINTON, PA., *January 8, 1891.*

MR. PATRICK BLEWITT, *Inspector of Mines, Scranton, Pa.:*

DEAR SIR: Herewith I hand you our yearly report for 1890.

Regarding explosion of boiler at our fan shaft on night of January 21, 1890, by which Michael J. Murley lost his life, I would respectfully refer you to the evidence at coroner's inquest, of which you doubtless have a copy, and also to the verdict of coroner's jury.

As to our improvements for the year, we have concentrated all of our boilers at the breaker and abandoned the old plant at fan shaft, having put in three (3) new steel boilers 30″ diameter by 36′ long, and two iron boilers 40″ diameter by 35′ long, all in first class condition. Steam is conducted through a new line of 5″ gas pipe to our big pump, a distance of 2,000′, and from thence through four and three inch branch lines to our hoisting engines and pumps and up the fan shaft to fan engine.

The total distance from boiler house to our lowest pump on underground slope is 3,900′ We made connection with the Olyphant Water Company's main by laying 2,500′ of 2″ gas pipe and have now a good supply of pure water.

We put in a line of perpendicular elevators in our breaker for hoisting screenings and pickings, also put in a set of small "pony" rolls for reducing pickings. Besides which, we have made other minor improvements on breaker.

Yours truly,
ELI T. CONNER, *Superintendent.*

Office of Pancoast Coal Company,
Throop, Lackawanna Co., Pa., *March 14, 1891.*

Patrick Blewitt, Esq., *Mine Inspector, Scranton, Pa.:*

Dear Sir: Replying to your inquiries in regard to the electric pumps, about the first of November last we struck a dip in the mine which made more water than twenty men could bale, and we were drowned out. We were about putting in steam pipe when Mr. Pocock came along with one of the Thomson Van Pepoele Electric Pumps, which, with our assistance, we put in place in thirty hours and it kept the water all out with ease. As the dip was over 3,500′ feet from the shaft the expense of placing and running this pump for four months was less than the cost of the steam pipe at the head of the shaft. We don't hesitate to recommend these pumps as indispensable in all such places in the mines when it is difficult or expensive to carry steam.

Very truly yours,
C. M. Sanderson, *President.*

The Riverside Coal Company,
Scranton, Penna., *January 19. 1891.*

Patrick Blewitt, Esq.:

Dear Sir: The following improvements to date of January 1, 1891, have been made at the works of the Riverside Coal Company, located in the borough of Archbald, Lackawanna county, on lands of the Howell estate, and Jones, Simpson & Co., comprising about 270 acres. Ground was broken in July, 1890, and by November first the following, one pair of 18″x30″ geared engines with 9′ drum, erected upon a substantial foundation of masonry were in readiness to sink the main shaft, one 16″x30″ engine erected upon a timber foundation was also in place to do like duty at the second opening, six cylinder boilers 34″ diameter by 50′ long, made of five-sixteenth shell steel, fitted with McClare blowers and 4′ diameter by 40′ wrought iron stack for burning culm, were also put in place to supply the steam.

Carpenter and blacksmith shops, wash-house, oil and powder houses are also completed, and whenever it will be necessary to use heat, steam pipes have been carried into this building to supply it. Culm is exclusively used for generating steam and the daily consumption is about twelve tons. All masonry such as breaker foundations, fan engines and fan foundations, cistern for the water supply, breaker engine bed and foundation for barn were also completed before frost set in. On the first of November sinking commenced at both shafts; the main shaft, size 11x20, with two hoisting ways and pump way is now down to a depth of 100′, having passed through two veins of good coal, 2′ and 3′ respectively. Ninety feet lower, we expect to find another vein about 4′ 6″ thick, and ninety still lower is the Archbald vein from six to eight feet

in thickness, which we hope to reach by the first of May. The air shaft, 10′x12′, is also down to 100′ in depth, over which, when fidished, we will erect a 20′ diameter fan, 6′ face driven direct by a 16″x30″ engine for the purpose of ventilation. A breaker which is also under way will be erected 200′ from the main shaft to which it will be connected by a substantial trestle work of white pine timber, with gravitating tracks to convey the cars back and forth. The breaker will be heated by steam, and supplied with modern machinery and appliances for cleaning and separating the coal, with a capacity of six to eight hundred tons per day. The product of the colliery will be carried to market by the New York, Ontario and Western railroad. July first, next, we expect this place will be completed and ready to commence operations among the many others of this already busy coal mining valley.

Very truly yours,

JOHN REESE, *Superintendent.*

TABLE I—*Showing Location, etc., of Collieries in the First Anthracite District for the year 1890.*

NAME OF COLLIERY.	Where located.	By whom operated.	Name of general mine superintendents and assistants.
Archbald slope and shaft	Lackawanna township	Dela., Lack. & Western R. R. Co.	Wm. R. Storrs, general coal agent.
Bellevue slope	" "	" " "	
Bellevue shaft	" "	" " "	
Breslin shaft	Third ward, Scranton city	" " "	Wm. H. Storrs, assistant general coal agent.
Cayuga shaft	" "	" " "	
Central shaft	Fifteenth ward, Scranton city	" " "	
Continental shaft	Lackawanna township	" " "	Benjamin Hughes, general mine superintendent.
Diamond No. 2 shaft	Twenty-first ward, Scranton city	" " "	
Diamond Tripp shaft	" " "	" " "	[mine superintendents.
Dodge shaft	Lackawanna township	" " "	Thomas D. Davies and Thomas W. Phillips, assistant
Holden shaft	" "	" " "	
Hampton shaft	" "	" " "	
Hyde Park shaft	Fifth ward, Scranton city	" " "	
Manville shaft	Thirteenth ward, Scranton city	" " "	John T. Snyder, chief engineer mine department.
Oxford shaft	Fifth ward, Scranton city	" " "	
Pyne shaft	Lackawanna township	" " "	
Sloan shaft	" "	" " "	Townsend Poor, master mechanic.
Storrs shaft	Dickson City borough	" " "	
Taylor shaft	Lackawanna township	" " "	
Taylor drift	" "	" " "	
Clinton slope	Fell township	Delaware and Hudson Canal Co.	A. H. Vandling, superintendent coal department.
Coal Brook tunnel	City of Carbondale	" " "	
Wilson Creek tunnel	Fell township	" " "	J. M. Chittenden, general outside superintendent.
Dickson shaft	Second ward, Scranton city	" " "	
Eddy Creek shaft	Olyphant borough	" " "	Andrew Nicol, general mine superintendent.
Grassy Island shaft	" "	" " "	
Jermyn No. 1 shaft	Jermyn borough	" " "	Andrew P. Patton, assistant mine superintendent.
Leggitt's Creek shaft	First ward, Scranton city	" " "	[breaker construction.
Marvine shaft	" "	" " "	Christ. Shearer, engineer in charge of mine surveys and
No. 1 shaft, Carbondale	City of Carbondale	" " "	
No. 3 shaft, Carbondale	" "	" " "	
Olyphant No. 2 shaft	Olyphant borough	" " "	
Powderly slope	Carbondale township	" " "	
Rackett Brook breaker	" "	" " "	Alexander Simpson, master mechanic.
Von Storch shaft and slope	Second ward, Scranton city	" " "	
White Oak slope	Archbald borough	" " "	
White Oak tunnels	" "	" " "	
Shaft No. 1, Dunmore	Dunmore borough	Pennsylvania Coal Company	John B. Smith, general superintendent.
Bunker Hill No. 1	" "	" " "	George B. Smith, assistant superintendent.
Gypsy Grove Nos. 3 and 4	" "	" " "	James Young, mine superintendent.
Shaft No. 5	" "	" " "	
Capouse shaft	Twenty-first ward, Scranton city	Lackawanna Iron and Coal Co.	Reese G. Brooks, mine superintendent.
Pine Brook shaft	Seventh ward, Scranton city	" " "	
Meadow Brook shaft	Twentieth ward, Scranton city	William Connell & Co.	William Connell, mine superintendent.
Meadow Brook tunnel	" "	" "	
National shaft	" "	" "	
Stafford shaft	Lackawanna township	" "	
Clifford shaft	Forest City bor., Susquehanna co.	Hillside Coal and Iron Company	W. A. May, general superintendent.
Erie shaft	Mayfield borough, Lackawanna co.	" " "	
Forest City shaft and slope	Forest City bor., Susquehanna co.	" " "	M. M. Johnson, mining engineer.

TABLE I—*Continued.*

NAME OF COLLIERY.	Where located.	By whom operated.	Name of general mine superintendents and assistants.
Glenwood shafts	Mayfield borough, Lackawanna co.	Hillside Coal and Iron Company.	
Keystone tunnel	" " "	" " "	
Jermyn No. 3 slope	Dickson City borough	John Jermyn	W. M. Jermyn, general superintendent.
Jermyn No. 4 shaft	" "	"	
Green Ridge slope	Dunmore borough	O. S. Johnson	O. S. Johnson, general superintendent.
Lackawanna Coal Company shaft	Blakely borough	Lackawanna Coal Co., Limited	" " " [assistant.
Edgerton tunnels	Archbald and Carbondale townships	Edgerton Coal Company, Limited	J. L. Crawford, general superintendent; J. W. White,
Simpson slopes	Fell township	Northwest Coal Company.	
Church slope	Second ward, Scranton city	Church Coal Company	M. F. Dolphin, general superintendent.
Providence Coal Company shaft	" " "	Providence Coal Company.	
Clark tunnel	Third ward, Scranton city	James Flynn Company	James Flynn.
Murray & Jackson	Dunmore borough	Murray & Jackson	M. J. Murray, superintendent.
Dolph tunnel	Winton borough	Dolph Coal Company, Limited	W. G. Robertson
Elk Creek drifts	Fell township	Frisbie, Blanchard & Co.	W. E. Frisbie.
Fair Lawn slope (abandoned)	Seventh ward, Scranton city	Fair Lawn Coal Company, Limited	John H. Hosie.
Grassy Island colliery	Winton borough	Grassy Island Coal Co., Limited	James Archbald, Jr.
Jones, Simpson & Co. shaft	Archbald borough	Jones, Simpson & Co.	Edward Jones.
Jones, Simpson & Co. drift	" "	" "	Edward S. Jones, assistant.
Mount Jessup slope	Winton borough	Mount Jessup Coal Co., Limited	Eli T. Connor.
Marshwood slope	" "	Moosic Mountain Coal Company	Chas. P. Ford.
Mount Pleasant shaft	Blakely borough	New York and Scranton Coal Co.	W. W. Patterson.
Pierce slope and drift	Archbald borough	Pierce Coal Company, Limited	Edward Jones.
Pancoast shaft	Dickson City borough	Pancoast Coal Company	Chas. D. Sanderson.
Rushbrook shaft and drift	Archbald borough	Rushbrook Coal Company	John S. Jenkins.
Spencer Bros. mines	Dunmore borough	A. D. and F. M. Spencer	A. D. and F. M. Spencer.
S. V. White mines	Winton borough	Winton Coal Company, Limited	B. M. Winton.

Table I—*Continued.*

Name of Colliery.	Post-office address.	Name of mine foreman.	Name of outside foreman.
Archbald slope and shaft		Joseph D. Lloyd	John Fern.
Bellevue slope	Scranton, Pa.	Thomas Eynon	B. C. Green.
Bellevue shaft	"	John Hale	"
Breslin shaft	Scranton, Pa.	Frank Zimmerman	E. H. Evans.
Cayuga shaft		John T. Morgan	G. S. Decker.
Central shaft		Lewis Roberts	E. S. Thomas.
Continental shaft	Scranton, Pa.	R. H. Williams	J. F. Green.
Diamond No. 2 shaft			Wm. F. Langstaff.
Diamond Tripp shaft			"
Dodge shaft	Scranton, Pa.	Edward James	Wm. Beachman.
Holden shaft	"	Evan J. Evans	H. A. Fillmore.
Hampton shaft		Elijah Dagger	J. H. Hoffman.
Hyde Park shaft		D. W. Moser	S. M. Ives.
Manville shaft	Scranton, Pa.	D. S. Evans	J. L. Atherton.
Oxford shaft		Reese A. Phillips	Wm. B. Thornton
Pyne shaft		James M. Thomas	A. Rheinhart.
Sloan shaft	Scranton, Pa.	H. P. Davis and Samuel Lewis, assistant	Fred. Peters.
Storrs shaft			Jacob C. Bowman.
Taylor shaft			J. P. Cooper.
Taylor drift			"
Clinton slope		William Bryden	Henry Carter.
Coal Brook tunnel	Scranton, Pa.	William McMyne	Robert Carter.
Wilson Creek tunnel		John Dunstan	"
Dickson shaft	Scranton, Pa.	Alexander Aikman	Wm. Richmond.
Eddy Creek shaft		Wm. H. Davis	William Belle.
Grassy Island shaft	Scranton, Pa.	David E. Lewis	J. G. Bell.
Jermyn No. 1 shaft	Olyphant, Pa.	Joseph E. Tennis	Thomas Hunter.
Leggitt's Creek shaft		Finlay Ross	G. W. Wilder.
Marvine shaft	Scranton, Pa.	Andrew Smith	George Griffin.
No. 1 shaft, Carbondale		John Waterfield	James P. Loftus.
No. 3 shaft, Carbondale		Morgan Thomas	Thomas Coogan.
Olyphant No. 2 shaft		Alexander Frew	John T. Mooney.
Powderly slope		Thomas Jordan	P. F. Carroll.
Rackett Brook breaker	Scranton, Pa.		
Von Storch shaft and slope		Martin Loftus and E. D. Jones	Chas. W. Ziegler.
White Oak slope		James Nicols	Thomas Law.
White Oak tunnels		J. J. Kearney	"
Shaft No. 1, Dunmore	Dunmore, Lackawanna county, Pa.	T. R. Young	James Masters.
Bunker Hill No. 1		John Moffat	Eber Branning.
Gypsy Grove Nos. 3 and 4	Dunmore, Lackawanna county, Pa.	Thos. Protheroe	James Masters.
Shaft No. 5	" " "	John Reed	Christopher Moffat.
Capouse shaft	Scranton, Pa.	Wm. P. Morgan	David Beaven.
Pine Brook shaft		John H. Powell	Henry Hess.
Meadow Brook shaft	Scranton, Pa.	Samuel T. Jones	Malachi L. Coyne.
Meadow Brook tunnel		" "	"
National shaft		Henry W. Davies	Frank Sleppy.
Stafford shaft		Evan T. Morgan	"
Clifford shaft	Scranton, Pa.	James White	J. D. Caryl.
Erie shaft		Michael Barbour	Wm. Walker.
Forest City shaft and slope	Scranton, Pa.	Benjamin Maxey	J. D. Caryl.

TABLE I—*Continued.*

NAME OF COLLIERY.	Post-office address.	Name of mine foreman.	Name of outside foreman.
Glenwood shafts		Michael M. Walsh	Wm. Walker.
Keystone tunnel		W. G. Glennon	"
Jermyn No. 5 slope	Scranton, Pa.	Wm. H. Hoskings, Jr.	Wm. E. Merritt.
Jermyn No. 4 slope		W. H. Hoskings	P. H. Gilgallon.
Green Ridge slope	Scranton, Pa.	Robert Martin	Wm. S. Boyd.
Lackawanna Coal Company shaft		Z. F. Kreiger	Wm. Harper.
Edgerton tunnels	Jermyn, Lackawanna county, Pa.	T. F. Battle, J. O. Davis and Patrick McCabe	J. G. Shipherd.
Simpson slopes		Wm. Brown	James Boyle.
Church slope	Scranton, Pa.	Wm. Dolphin	M. F. Dolphin.
Providence Coal Company shaft		John Gibbons	"
Clark tunnel	Scranton, Pa.	James Flynn	James Flynn.
Murray & Jackson	Dunmore, Lackawanna county, Pa.	M. J. Murray	G. H. Jackson.
Dolph tunnel	Scranton, Pa.	James W. Smith	Wells C. Warner.
Elk Creek drifts	Carbondale, Pa.	Phillip McCabe	W. E. Frisbie.
Fair Lawn slope (abandoned)	Scranton, Pa.	Mathew Cavanagh	William Wheeler.
Grassy Island colliery	"	Anthony Gillespie	Daniel Dorris.
Jones, Simpson & Co. shaft	Archbald, Pa.	David Williams	D. J. Gilmartin.
Jones, Simpson & Co. drift	"	James M. Eaton	"
Mount Jessup slope	Winton, Lackawanna county, Pa.	Ebenezer Hunter	Eli T. Connor.
Marshwood slope	Marshwood, Lackawanna co., Pa.	Geo. P. Davis	Charles P. Ford.
Mount Pleasant shaft	Peckville, Lackawanna county, Pa.	Anthony Gillespie	Richard J. Cnu.
Pierce slope and drift	Archbald, Lackawanna county, Pa.	T. Frank Battle	Eugene Taylor.
Pancoast shaft	Throop, Lackawanna county, Pa.	Joseph V. Birtly	Charles D. Sanderson.
Rushbrook shaft and drift	Scranton, Pa.	P. H. Bohner	John S. Jenkins.
Spencer Bros. mines	Dunmore, Lackawanna county, Pa.	P. H. Morgan	A. D. Spencer.
S. V. White mines	Winton, Lackawanna county, Pa.	Reese R. Griffiths	A. S. Hartman.

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the First Anthracite District for the year ending December 31, 1890.*

NAMES OF COLLIERIES AND BY WHOM OPERATED.	Total production of coal in tons.	Total number of tons of coal shipped to market.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents	Number kegs of powder used.	Number steam boilers.	Number horses and mules	Number mine locomotives	Horse power of locomotives.
Delaware, Lackawanna and Western Railroad Company.													
Archbald shaft	158,472.15	149,756.15	7,700.00	1,016.00	191.80	459	1	4	5,025	14	68	. . .	. . .
Bellevue shaft	142,352.15	125,191.15	13,500.00	3,661.00	135.90	418	. . .	2	3,855	24	57	1	72
Bellevue slope				. . . .		97	2	1	. . . . .	. . .	17	. . .	. . . .
Brisbin shaft	209,910.09	198,864.09	8,250.00	2,796.00	208.20	432	. . .	2	5,762	15	55	. . .	. . . .
Cayuga shaft	38,276.03	26,226.03	6,600.00	5,450.00	57	342	2	6	875	15	59	1	92
Central shaft	123,757.15	104,493.15	17,000.00	2,264.00	105.50	500	2	2	2,750	31	84	1	72
Continental shaft	186,653.02	176,210.02	8,500.00	1,943.00	172 10	476	1	7	3,912	15	60	. . .	. . . .
Dodge shaft	167,331.17	153,773.17	11,550.00	2,008.00	184.80	367	. . .	5	4,686	21	69	1	92
Holden shaft	141,854.13	134,177.13	6,600.00	1,077.00	183 20	312	1	4	4,200	12	49	. . .	. . . .
Hampton shaft	143,700.15	133,223.15	8,800.00	1,677.00	189.30	431	. . .	4	5,091	16	69	. . .	. . . .
Hyde Park shaft	143,554.17	134,931.17	6,600.00	2,023.00	204.70	357	2	7	5,024	12	63	. . .	. . . .
Manville shaft	48,647.00	35,585.00	9,900.00	3,162.00	77	228	1	4	5,324	18	25	. . .	. . . .
Oxford shaft	151,403.07	134,993.07	10,450.00	5,960.00	186.10	405	. . .	4	4,148	19	58	1	92
Pyne shaft	170,043.17	156,609 17	12,100.00	1,334.00	186 80	399	1	1	4,594	22	55	1	92
Sloan shaft	179,308.19	168,836.19	9,900.00	572.00	195.50	488	. . .	6	5,416	18	79	1	92
Storrs shaft	109,174.02	101,514.02	6,873.00	787.00	148.50	433	1	3	5,011	16	52	2	164
Trepp and No. 2 Diamond	264,614.00	230,663.00	30,000.00	3,951.00	203.40	525	2	12	7,762	55	79	3	256
Taylor shaft and drift	190,176.04	178,333.04	8,800.00	3,043.00	196.60	448	3	4	5,561	16	81	. . .	. . . .
Miscellaneous employés (surveyors, draughtsmen, masons carpenters, machinists, clerks and officials)	. . . . .	. . . . .	. . . . .	. . . . .	. . .	171	. . .	. . .	. . . . .	. . .	. . . .	. . .	. . . .
Totals	2,569,232.10	2,343,385.10	183,123.00	42,724.00	184.80	7,288	19	78	78,996	339	1,079	12	1,024

TABLE II—*Continued.*

NAMES OF COLLIERIES AND BY WHOM OPERATED.	Total production of coal in tons	Total number of tons of coal shipped to market.	Total number of tons of coal consumed at mines.	Total number of tons of coal sold at mines.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Horse power of locomotives.
Delaware and Hudson Canal Company.													
Clinton slope and drift mines	61,811.03	69,643.00	2,160 00	375.03	148.75	231	. . .	. . .	2,447	6	20	. . .	. . .
Coal Brook tunnel mines	266,620.10	261,145.10	5,475.00	. . . . .	224.50	357	1	3	8,468	6	25	1	37
Wilson Creek tunnel mines					224.50	247				2	37		
Midland tunnel mines					224.50	17					2		
Dickson shaft mines	243,852.16	231,875.02	9,900.00	2,077.14	225 50	451	. . .	5	6,307	18	40	. . .	. . .
Eddy Creek shaft mines	72,722.04	64,689.05	7,300.00	732.19	127 75	356	2	4	2,186	. . .	. . .	. . .	. . .
Grassy Island shaft mines	159,629 15	145,292.05	10,950.00	3,387.10	210.50	418	. . .	8	4,254	21	38	1	29
Jermyn No. 1 shaft mines	198,819 02	173,758.19	18,800.00	6,260.03	207 75	427	1	1	4,059	15	29	. . .	. . .
Leggett's Creek shaft mines	186,417.03	171,422.16	11,000.00	3,994 07	213 25	461	. . .	5	4,320	15	52	. . .	. . .
Marvine shaft mines	192,153.05	173,903.05	18,250.00	. . . . .	222 50	400	1	5	4,397	21	47	. . .	. . .
No. 1 Shaft, Carbondale mines	105,622.00		2,750 00	. . . . .	191 25	288	. . .	2	3,018	5	36	. . .	. . .
No. 3 Shaft, Carbondale mines	52,739 00	107,818.03	6,600 00	. . . . .	181 50	144	. . .	. . .	2,013	12	15	. . .	. . .
Powderly slope mines	121,814 00		4,950 00	. . . . .	186 50	245	. . .	. . .	4,496	9	28	. . .	. . .
Rackett Brook breaker	1,375.00	158,056.17	1,375.00	. . . . .	252.50	86	. . .	. . .	. . .	5	5	. . .	. . .
Olyphant No. 2 shaft mines	28,060 06	18,935.06	9 125.00	. . . . .	42.75	283	. . .	1	621	12	32	. . .	. . .
Von Storch slope and shaft mines	267,310 09	240,793.12	18,573.00	7,943 17	223	626	1	13	7,012	29	75	. . .	. . .
White Oak slope and drift mines	165,420.14	159,794.08	3,500.00	2,126.06	215.25	416	. . .	1	4,394	6	31	1	29
Manville shaft	47,233.09	45,513.10	. . . . .	1,719 19	77	*	*	3	*	*	*	*	*
Stock Coal at Clinton mines 1889	10,367.00	. . . . .	. . . . .	. . . . .	. . . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Miscellaneous employés (surveyors, draughtmen, masons, carpenters, mechanics, clerks and officers)	. . . . .	. . . . .	. . . . .	. . . . .	. . . .	86	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Totals	2,181,967.16	2,022,641.18	130,708.00	28,617.18	207.90	5,551	6	51	57,367	182	512	3	95

*Returned on Delaware, Lackawanna and Western Railroad Company report

Jermyn No. 3 shaft, J. Jermyn	62,964.09	56,364.09	6,600.00	. . . . .	189.40	239	2	2	2,274	12	17	. . .	. . . .
Jermyn No. 4 shaft, J. Jermyn	143,682.14	130,498 07	11,550.00	1,634.07	182 30	415	1	6	4 609	21	45	. . .	. . . .
	206,647.03	186.862 16	18,150.00	1,634.07	185.85	654	3	8	6,883	33	62	. . .	. . . .
Green Ridge slope, O S. Johnson	127,316.04	114,292.16	8,250.00	4,773.08	215	249	2	10	5,962	15	25	. . .	. . . .
Lackawanna Coal Company shaft	247,203.17	238,514.07	6,600.00	2,089.10	239.30	545	4	8	7,121	12	60	. . .	. . . .
	374,520.01	352,807.03	14,850.00	6,862.18	227.15	794	6	18	13,083	27	85	. . .	. . . .
Edgerton drifts, Edgerton Coal Company	171,137.00	160,953.00	9,657.00	527 00	168	287	1	2	4,757	6	29	2	70
Simpson slopes, Northwest Coal Company	186,313.04	175,209.14	10,512.00	591.10	216.30	342	7	13	6,200	17	42	2	70
	357,450.04	336,162.14	20,169.00	1,118.10	192.15	629	8	15	10,957	23	71	4	140
Pennsylvania Coal Company.													
Shaft No. 1	77,620.00	61,768.00	7,975.00	7,877.00	191	193	2	. . .	2,776	17	13	1	35
Bunker Hill No. 1	8,298 00	7,298.00	1,000.00	. . . . .	236	18	. . .	. . .	239	3	1	. . .	. . . .
Gypsy Grove	114,440.00	108,940.00	5,500.00	. . . . .	197	323	. . .	1	4,992	10	32	. . .	. . . .
Shaft No. 5	140.680.00	135,180.00	5,500.00	. . . . .	214	410	1	1	6,229	10	34	. . .	. . . .
	341,038.00	313,186.00	19,975.00	7,877.00	209.50	944	3	2	14,236	40	80	1	35
Capouse shaft, Lackawanna Iron and Coal Company	288,934.00	277,639.00	8,300.00	2,995.00	189.20	534	. . .	13	8,235	15	85	. . .	. . . .
Pine Brook shaft, Lackawanna Iron and Coal Company	313,121 00	285,226.00	6,260 00	21,635.00	205.30	603	. . .	5	9,447	4	74	. . .	. . . .
	602,055.00	562,865.00	14,560 00	24,630.00	197 25	1,137	. . .	18	17,682	19	159	. . .	. . . .
Wm. McConnell & Co.													
Meadow Brook shaft	222,580.00	201,233 00	5,607 00	15,740.00	185.60	334	2	2	6,577	17	37	. . .	. . . .
Meadow Brook tunnel	65,905.00	65,172.00	733.00	. . . . .	183.10	89	1	2	1 893	1	16	1	35
National shaft and slope	62,573.00	57,009.00	5,564.00	. . . . .	183.10	221	1	2	2,234	14	18	. . .	. . . .
Stafford shaft and slope	28,081.00	26,981.00	1,100.00	. . . . .	183.10	69	2	1	964	3	5	1	35
	379,139.00	350,395.00	13,004.00	15,740.00	184.35	713	6	7	11,668	35	76	2	70
Hillside Coal and Iron Company.													
Clifford shaft	105,186.04	96,228.09	8,780.00	177.15	207.75	233	2	3	3,915	8	19	. . .	. . . .
Erie shaft	176,582.11	162,465.07	10,220.00	3,897.04	183.75	494	. . .	8	5,596	24	41	. . .	. . . .
Forest City shaft and slope	210,164.05	193,854.14	12,382.00	3,927.11	215.75	406	2	3	7,280	15	45	2	70
Glenwood shaft	216,319.12	208,107.12	8,212.00	. . . . .	176.25	483	1	1	5,668	9	31	. . .	. . .
Keystone drift	101,647.01	100,187.01	1,460.00	. . . . .	225	244	. . .	. . .	2,924	2	26	. . .	. . . .
	809,899.13	760,843.03	41,054 00	8,002.10	201.16	1,860	5	15	25,383	58	162	2	70
Marshwood slope, M. M. C. Co., Limited	63,461.00	59,697.00	3,264 00	500.00	193	161	1	3	2,538	6	33	. . .	. . . .
Clark tunnel, Jas. Flynn	4,663.10	44.00	400.00	4,219.10	. . . .	17	. . .	. . .	157	1	11	. . .	. . . .
Church slope, Church C. Co., Limited	14,751.03	3,597.01	1,000.00	10,154.02	161	29	. . .	. . .	344	2	5	. . .	. . . .
Dolph drift, Dolph C Co., Limited	87,836.08	85,810.06	1,200.00	826.02	155	256	1	2	3,453	4	25	. . .	. . . .
Elk Creek drifts, Frisbie & Co., Limited	10,293.00	9,973.00	200.00	120.00	. . . .	46	. . .	. . .	305	1	8	. . .	. . . .
Fair Lawn slope, Fair Lawn C. Co., Limited	10,376.00	7,206.00	1,000.00	2,170.00	35	166	. . .	. . .	593	6	13	. . .	. . . .
Grassy Island shaft, Grassy Island C. Co.	12,637.17	9,600.02	2,670.00	367.15	19 30	346	. . .	. . .	388	15	38	1	35
Jones, Simpson & Co., shaft and drift	149,294.01	142,214.01	7,080.00	. . . . .	209.90	430	. . .	2	5,475	16	33	2	70

TABLE II—*Continued.*

NAMES OF COLLIERIES AND BY WHOM OPERATED.	Total production of coal in tons	Total number of tons of coal shipped to market	Total number of tons of coal consumed at mines	Total number of tons of coal sold at mines.	Number days worked.	Number persons employed	Number fatal accidents.	Number non-fatal accidents	Number kegs powder used.	Number steam boilers.	Number horses and mules	Number mine locomotives.	Horse power of locomotives.
Murry & Jackson shaft,	6,526.00	3,200 00	550.00	2,776.00	202	22	. . .	. . .	330	2	6	. .	. . . .
Mount Pleasant slope Wm. T Smith,	177,410.00	154,107 00	7,700.00	15,603 00	211 90	467	1	8	7,920	14	39	. . .	. . . .
Mount Jessup slope, Mount Jessup C Co., Limited,	29,097 16	23,048.16	5,500.00	549.00	94.40	163	1	1	1,199	12	23	. . .	. . . .
	566,346.15	498,497 06	30,564.00	37,285.09	. .	2 103	4	16	22,702	79	234	3	105
Total,	3,637,095 16	3,361,618.02	172,326.00	103,150.14	. . . .	8,834	35	99	122,596	314	929	12	420
Ontario No. 1 mines, Reese & Moser,	13,490 00	12,000 00	500.00	990.00	120	102	. . .	1	400	3	17	. . .	. . . .
Ontario shaft, New York and S. C. Co.,	16,335 12	11,324.10	4,675.00	336.02	53.80	207	. . .	. . .	676	17	13	1	35
Providence Coal Company shaft,	48,240.06	39,890.06	2,300 00	6,050.00	199	158	. . .	. . .	2,461	6	29	. . .	. . . .
Pierce slope and drift, P. C Co., Limited,	62,955.00	54,874.00	7,950.00	131.00	72 60	316	2	1	1,410	13	24	3	120
Pancoast shaft, Pancoast C. Co.,	143,660.17	131,842 04	9,120.00	2,698.13	205.75	407	. . .	6	5,226	22	59	. . .	. . . .
Rushbrook mines, R. B. Coal Co.,	12,904.00	9,254 00	3,300.00	350.00	139	196	1	2	943	6	8	1	35
Spencer shaft, A. D. and F M. Spencer,	141,597.00	132,000.00	4,675.00	4,922 00	181.50	341	1	2	6,725	11	34	. . .	. . . .
S V White tunnel, W. C. Co., Limited,	78,256 10	73,477 00	4,650 00	129 10	179 50	214	. . .	1	2,872	3	16	2	70
Tripp & Co local coal sales,	14,000.00	600.00	. . . . .	13,400 00	255	28	. . .	. . .	. . . . .	. . .	. . . .	. . .	. . . .
Seven local coal sale mines,	12,500.00	. . . . .	500.00	12,000.00	92	80	. . .	. . .	520	2	18	. . .	. . . .
Totals,	543,939.05	465,262.00	37,670.00	41,007.05	. . . .	2,049	4	13	21,233	83	218	7	260
Grand totals,	8,932,235.07	8,192,908.10	523,827 00	215,499.17	. . .	23,632	64	241	280,200	318	2,738	34	1,799

TABLE III—*Showing the Number of each class of employes at each Colliery in the First Anthracite District, during the year 1890.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.						Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters, engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Delaware, Lackawanna and Western Railroad Company.														
Archbald shaft mines	1	108	108	32	43	14	306	1	14	87	51	1	154	460
Bellevue shaft mines	1	91	92	22	34	8	248	2	17	96	55	1	171	419
Bellevue slope mines	1	33	33	11	14	5	97							97
Brisbin shaft mines	1	99	105	37	41	11	294	1	6	80	51	1	139	433
Cayuga shaft mines	1	68	68	30	38	5	210	1	19	80	32	1	133	343
Central shaft mines	2	111	117	47	42	21	340	1	11	86	62	1	161	501
Continental shaft mines	1	110	113	39	46	13	322	1	9	80	64	1	155	477
Dodge shaft mines	1	88	88	23	33	7	240	1	10	68	48	1	128	368
Diamond No. 2 shaft mines	1	19	26	12	6	2	66	1	33	68	61	1	164	230
Holden shaft mines	1	75	68	18	28	12	202	1	3	74	32	1	111	313
Hampton shaft mines	1	95	95	26	55	13	285	1	12	65	68	1	147	432
Hyde Park shaft mines	1	77	74	23	51	11	237	1	12	62	45	1	121	358
Manville shaft mines	1	52	44	18	17	4	136	1	16	42	33	1	93	229
Oxford shaft mines	1	90	94	34	35	17	271	1	18	75	40	1	135	406
Pyne shaft mines	1	100	96	29	35	7	268	1	11	75	44	1	132	400
Sloan shaft mines	2	125	125	31	38	21	342	1	10	85	50	1	147	489
Storr's shaft mines	2	117	117	30	37	12	315	1	13	54	50	1	119	434
*Tripp shaft mines	1	101	107	29	35	23	296							296
Taylor shaft mines	1	86	89	29	33	13	251	1	10	80	56	1	148	449
Taylor drift mines	1	19	19	3	5	3	50							
†Miscellaneous employes												171	171	171
Totals	23	1,664	1,678	523	666	222	4,776	18	224	1,257	842	188	2,529	7,305
Delaware and Hudson Canal Company.														
Clinton slope and drift mines	1	64	65	14	7	3	152	1	5	32	41	1	80	232
Coalbrook tunnel mines	1	63	38	27	23	5	157	1	9	97	93	1	201	622
Midland tunnel mines		8	3	2	3	1	17							
Wilson Creek tunnel mines	1	141	44	22	30	9	247							

*Coal prepared at Diamond No. 2. †Surveyors, draughtsmen and chainmen, 25; masons, 40; carpenters, 55; machinists, 3; officemen, 6; officers, 9.

TABLE III—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.						GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters, engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Dickson shaft mines	1	114	116	23	54	14	322	1	13	60	55	1	130	452
Eddy Creek shaft mines	1	76	88	40	32	3	240	1	10	64	41	1	117	357
Grassy Island shaft mines	1	142	70	39	26	8	286	1	7	65	59	1	133	419
Jermyn No. 1 shaft mines	1	174	62	39	27	16	319	1	5	50	52	1	109	428
Leggett's Creek shaft mines	1	102	100	40	67	17	327	1	9	65	59	1	135	462
Marvine shaft mines	1	100	100	32	47	15	295	1	8	60	36	1	106	401
No. 1 Shaft Carbondale mines	2	149	21	32	37	4	245	1	2	5	35	. . .	43	288
White Bridge tunnel mines														
No. 3 Shaft Carbondale mines	1	55	27	11	20	3	117	1	1	5	20	. . .	27	144
Olyphant No. 2 shaft mines	1	74	58	26	30	6	195	1	6	36	45	1	89	284
Powderly slope mines	1	134	22	24	22	6	209	1	3	11	21	. . .	36	245
Racket Brook Breaker	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	1	48	36	. . .	86	86
Von Storch slope diamond and rock vein	. . .	27	19	19	38	5	109							
Von Storch slope 14 foot or Big vein	1	31	31	14	21	6	103	1	9	60	79	1	150	628
Von Storch shaft Clark vein	1	87	77	30	58	13	266							
White Oak slope mines	1	12	12	6	3	. . .	34							
White Oak tunnel No. 5 mines	1	98	102	. . .	. . .	7	208	1	10	70	39	1	121	417
White Oak tunnel No. 3¼ mines	. . .	34	3	4	13	. . .	54							
*Miscellaneous employes	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	86	86	86
Totals	18	1,695	1,056	444	548	141	3,902	15	98	728	711	97	1,649	5,551
Jermyn No. 3 slope mines	1	55	55	13	15	7	146	1	4	56	32	3	96	242
Jermyn No. 4 shaft mines	1	100	100	40	55	10	306	1	4	50	54	1	110	416
Green Ridge slope mines	1	60	50	28	31	7	177	1	3	35	33	1	73	250
Lackawanna Coal Company shaft mines	1	135	135	40	73	10	394	1	6	100	44	3	154	548
Edgerton tunnel mines	3	85	54	11	28	8	189	1	5	55	37	1	99	288
Simpson slope mines	3	100	81	19	31	9	243	1	6	47	45	2	101	344
Shaft No. 1 Dunmore mines	1	50	47	9	12	6	125	1	5	30	32	1	69	194
Bunker Hill No. 1 Dunmore mines	1	6	6	1	1	. . .	15	. . .	1	. . .	2	. . .	3	18

*Surveyors, draughtsmen and chainmen, 25; masons, 40; carpenters, 55; machinists 30; officemen, 6; officers, 9.

Gypsy Grove No. 3 Dunmore mines	1	56	48	9	15	4	133	1	3	32	43	1	80	324
Gypsy Grove No 4 Dunmore mines		48	34	7	15	7	111							
Shaft No. 5 Dunmore mines	1	116	110	24	37	14	302	1	3	59	45	1	109	411
Capouse shaft mines	2	129	111	55	68	14	379	1	14	102	38	1	156	535
Pine Brook shaft mines	2	125	130	59	80	27	423	1	8	84	87	2	182	605
Meadow Brook shaft mines	1	114	58	13	35	12	233	1	8	68	24	1	102	335
Meadow Brook tunnel mines	1	37	21	6	18	4	87				2		2	89
National shaft and slope mines	1	53	18	18	21	6	117	1	7	64	32	2	106	223
Stafford shaft mines	1	26	26	3	6	2	64		2		4	1	7	71
Clifford shaft mines	1	81	20	14	15	6	137	1	7	43	45	2	98	235
Erie shaft mines	1	137	129	45	64	10	386	1	11	45	48	3	108	494
Forest City shaft mines	1	80	60	20	24	5	190	2	9	47	76	3	137	409
Forest City slope mines	1	45	15	9	10	2	82							
Glenwood shaft mines	1	126	124	42	32	15	340	1	9	80	53	2	145	485
Keystone drift mines	1	67	68	11	29	6	182	1	2	29	30	1	63	245
Clark drift mines	1	3	3		2		9			1	8		9	18
Church slope mines	1	10	2	2	4		19	1	2	4	3		10	29
Dolph drift mines	1	65	46	7	35	4	158	1	5	64	28	2	100	258
Elk Creek drifts mines	1	10	8	3	4	1	27	1	2	8	8	1	20	47
Elk Hill shaft (sinking) mines									5		28		33	33
Fair Lawn slope mines	2	35	35	7	20	6	105	2	3	42	14	2	63	168
	34	1,954	1,594	515	780	202	5,079	24	134	1,145	895	37	2,235	7,314
Grassy Island shaft mines	1	35	33	10	23	3	105	2	4	65	62	2	135	348
Grassy Island drift mines	1	55	25	8	14	5	108							
Jones, Simpson & Co. drift and shaft mines	2	162	73	18	38	12	305	1	6	65	53	3	128	433
Murray & Jackson's shaft	1	4	4		5		14	1	1	3	3		8	22
Mount Pleasant shaft	1	104	104	31	44	21	305	1	6	105	50	3	165	470
Mount Jessup slope	1	41	17	12	10	1	82	1	11	41	28	2	83	165
Marshwood slope and drift	1	43	40	8	21	4	117	1	8	30	15	2	56	173
Ontario No. 1 slope	1	40	12	4	8		65	1	3	24	10	2	40	105
Ontario shaft mine	2	30	40	13	4	5	94	1	6	34	72	2	115	209
Providence Coal Company shaft	1	54	10	10	25	4	104	1	6	26	21	2	56	160
Pierce Coal Company slope mines	1	80	90	16	23	4	214	1	9	50	42	2	104	318
Pancoast shaft mines	2	81	88	43	51	11	276	1	9	58	63	2	133	409
Rushbrook shaft mines	1	39	39	41	10	1	131	1	2	40	22	2	67	198
Spencer shaft mines	2	79	79	24	37	13	234	1	4	52	50	2	109	343
S. V. White drift mines	1	54	48	17	28	4	152	1	4	40	17	2	64	216
Totals	19	901	702	255	341	88	2,306	15	79	633	508	28	1,263	3,569
Grand totals	94	6,214	5,030	1,737	2,335	653	16,063	72	535	3,763	2,956	340	7,676	23,739

Recapitulation of the most Important Statistics contained in Tables.

NAMES OF OPERATORS	Total production of coal in tons.	Total shipments of coal in tons.	Number of tons of coal consumed at mines.	Number of tons of coal sold for local consumption	Number of kegs of powder used.	Number of persons employed.	Number of days worked.	Number of fatal accidents.	Number of non-fatal accidents.
Delaware, Lackawanna and Western Railroad Company. . .	2,569,232.10	2,343,385.10	183,123.00	42,724 00	78,996	7,288	184 8	19	78
Delaware and Hudson Canal Company.	2,181,967.16	2,022,641 18	130,708.00	28,617.18	57,367	5,551	207 9	6	51
John Jermyn.	206,647.03	186,862.16	18,150 00	1,634 07	6,883	654	183 85	3	8
Lackawanna Coal Company and O. S. Johnson.	374,520.01	352,807.03	14,850.00	8,862 18	13,083	704	227. 15	6	18
Edgerton & Simpson—C. D. Simpson.	357,450.00	336,162.14	20,169.00	1,118 10	10,957	629	192 15	8	15
Pennsylvania Coal Company.	341,038.00	313,186.00	19,975.00	7,877 00	14,236	944	209.50	3	2
Lackawanna Iron and Coal Company.	602,085.00	562,865.00	14,560.00	24,630 00	17,682	1,137	197.25	. . . . .	18
William Connell & Co	379,139.00	350,395.00	13,004.00	15,740 00	11,668	713	184.35	6	7
Hillside Coal and Iron Company.	809,899.13	760,843.03	41,054.00	8,002.10	25,383	1,860	201 16	5	15
Miscellaneous coal companies.	1,110,286 00	963,759.06	68,234.00	78,292.14	43,935	4,152	185	8	29
Grand totals.	8,932,235.07	8,192,908.10	523,827.00	215,499 17	280,200	23,632	197 51	64	241

Recapitulation—*Continued.*

Names of Operators.	Number of widows.	Number of orphans.	Number of breakers.	Capacity of breakers.	Number of mine openings from which coal is produced.	Number of pumping engines and steam pumps.	Horse power of pumping engines and steam pumps.	Number of breaker, fan and hoisting engines.	Horse-power of breaker, fan and hoisting engines.	Number of steam boilers.	Number of locomotives used in and about the mines.	Horse-power of locomotives.	Number of horses and mules.
Delaware, Lackawanna and Western Railroad Company	10	50	16½	16,950	22	140	5,568	124	9,584	339	12	1,024	1,079
Delaware and Hudson Canal Company	2	16	12½	10,485	21	46	2,209	78	4,639	182	3	95	512
John Jermyn	3	5	2	1,500	2	6	175	15	840	33	. . . .	. . . .	62
Lackawanna Coal Company and O. S. Johnson	4	5	2	2,000	2	3	100	7	485	27	. . . .	. . . .	100
Edgerton & Simpson C. D. Simpson	1	6	2	1,600	5	9	115	15	530	10	4	140	71
Pennsylvania Coal Company	1	12	4	1,700	5	8	518	15	315	41	1	35	80
Lackawanna Iron and Coal Company	. . .	. . .	2	3,000	2	5	252	9	1,089	19	. . . .	. . . .	150
William Connell & Co.	4	26	2	1,400	4	10	255	12	735	35	2	70	76
Hillside Coal and Iron Company	. . .	. . .	5	3,800	9	29	522	28	1,050	58	2	70	162
Miscellaneous coal companies	3	12	20	10,610	26	45	951	82	4,542	162	10	365	452
Grand totals	28	132	68	53,045	98	301	10,665	385	23,809	905	34	1,799	2,753

Note.—The Delaware, Lackawanna and Western Railroad Company and the Delaware and Hudson Coal Company work the Manville mines alternate months, which causes one-half breaker to be marked to each company in this table.

TABLE IV—*List of Fatal Accidents occurring in and about the mines of the First Anthracite Mine District, for the year ended December 31, 1890.*

Date of accident		NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident.
Jan.	7.	Wm. Couch,	Miner,	33	1	..	Jermyn No. 4,	Dickson City borough,	Killed by a fall of roof.
	9.	John Twaddle,	"	25	1	3	Lackawanna Coal Co. mines,	Blakely borough,	Killed by a piece of rock falling from the roof on him.
	9.	John Evans,	Driver,	17	..	..	Rushbrook shaft mines,	Archbald borough,	Killed; fell down shaft from top to botton vein, one hundred and fifty-five feet.
	13.	Patrick Malia,	Miner,	45	1	7	Providence shaft mines,	2d ward, Scranton,	Killed; fall of rock caused by fall of roof.
	22.	John Munley,	Boiler foreman,	28	1	2	Mt. Jessup Boilerhouse mines	Winton borough,	Seriously scalded; boiler exploded at 12 o'clock midnight, injuring Munley so badly that he died at 5 o'clock p. m. next day.
	22.	Albert Griffiths,	Miner,	35	1	4	Storr's shaft mine,	Dickson City borough,	Killed by a fall of roof.
Feb.	4.	Daniel Evans,	Driver's helper,	16	..	..	Taylor shaft mine,	Lackawanna township,	Seriously injured; kicked by a mule; died 31 hours after.
	4.	Christy Fenwick,	Slate picker,	13	..	..	Edgerton breaker,	Jermyn borough,	Seriously injured; fell in breaker 18 feet and his neck was broken.
	8.	John O. Niffery,	Mine laborer,	35	1	..	Lackawanna Coal Co. mines,	Blakely borough,	Killed by a fall of roof.
	11.	Mike McCluskey,	" "	25	..	..	Jermyn No. 1 shaft mines,	Jermyn borough,	Killed instantly; a piece of brick fell on his head.
	17.	Fred. T. Wells,	Headman, shaft,	24	..	..	Clifford shaft, Forest City,	Forest City bor., Susq. co.	Killed; fell down shaft.
	20.	David W. Moses,	Shaft sinker,	25	..	..	Cayuga shaft,	3d ward, Scranton,	Seriously injured; a piece of rock fell down the shaft a distance of 40 feet and struck him; died on 22d.
	24.	Thomas D. Hughes,	Miner,	37	1	6	Central shaft mines,	15th ward, Scranton,	Killed by a premature explosion of a blast.
March	6.	Michael H. Malea,	Pump runner,	43	..	6	Cayuga shaft,	3d ward, Scranton,	Killed; fell down the shaft.
	14.	Michael Mele,	Mine laborer,	24	..	..	Lackawanna Coal Co. mines,	Blakely borough,	Killed; fell from carriage while coming up the shaft on hoisting carriage.
	15.	Bert. Ross,	Slate picker,	13	..	..	Simpson breaker,	Fell township,	These boys were in the boiler room at noon sitting down when three boilers exploded, killing Bert Ross and Richard Whithrington and injuring John Ross and John Thomas so that they died the next day.
	15.	John Ross,	"	15	..	..			
	15.	Richard Whithrington,	"	15	..	..			
	15.	John Thomas,	"	13	..	..			
	24.	George Williams,	Miner,	35	..	..	Holden shaft mines,	Lackawanna township,	Seriously injured by an explosion of gas; died same day.
April	4.	Wm. A. Davis,	"	40	1	4	Taylor shaft mines,	" "	Killed instantly by a fall of top coal.
	9.	Peter McClement,	"	57	1	5	Shaft No. 1 Pa. Coal Co.,	Dunmore borough,	Killed instantly by a fall of top coal.
	22.	John Dacey,	Prop cutter,	47	1	8	Central colliery,	15th ward, Scranton,	Killed instantly; fell down shaft from surface to bottom.

May	17.	William McNeallis,	Miner,	33	1	3	Marshwood mines,	Olyphant borough,	Killed by a fall of rock.
	28.	John Carden,	"	28			Coal Brook tunnel,	Carbondale City,	Seriously injured by a fall of rock; died 4 hours after.
	30.	Louis Boshek,	"	68	1	3	Meadow Brook tunnel,	20th ward, Scranton,	Seriously injured by a fall of top coal; died June 1.
June	10.	Patrick King,	"	45	1	10	Stafford mines,	Lackawanna township,	Seriously injured by fall of roof; died on 11th.
	11.	Steeve Kilian,	Mine laborer,	32			Simpson mines,	Fell township,	Killed by a fall of coal.
	14.	Allen Barr,	" "	58		2	Von Storch 14-foot vein,	2d ward, Scranton,	Killed by a fall of rock.
	14.	Martin Kearney,	" "	24			Shaft No. 1 Pa. Coal Co.,	Dunmore borough,	Killed by large saddle of rock falling on him.
	21.	John Thiel,	Miner,	54	1	2	Hyde Park, Diamond vein,	5th ward, Scranton,	Seriously injured by a fall of top coal; died 2 hours after.
	25.	Isaac Coyne,	"	30	1	4	Archbald mines,	Lackawanna township,	Seriously injured by a fall of coal; died June 28.
	27.	Michael Marley,	"	55	1	5	Meadow Brook shaft,	20th ward, Scranton,	Spinal column dislocated by a fall of top coal; died July 2.
July	19.	Everson E. Waters,	"	27	1	1	Green Ridge slope mines,	Dunmore borough,	Killed; shot through the pillar.
	28.	David Davis,	Door boy,	15			Mount Pleasant shaft mines,	14th ward, Scranton,	Killed by a runaway car; it jumped track and caught him.
	28.	James McGee,	Miner,	50	1	6	Simpson slope mines,	Fell township,	Seriously injured; fall of a rock bell; died same afternoon.
Aug.	26.	Joseph Stevens,	Driver,	16			Glenwood No. 1 shaft,	Mayfield borough,	Killed by falling down a shaft.
	28.	John Lynott,	State picker,	16			Dolph breaker,	Winton borough,	Fatally injured by a runaway car at breaker; both his legs were mashed; he died the same day.
Sept.	1.	Martin Vishusky,	Miner,	33	1	1	Lackawanna Coal Co. mines,	Blakely borough,	Killed instantly; fall of bony and top coal.
	13.	John Highland,	Mine laborer,	22			Taylor mines,	Lackawanna township,	Both legs cut off; fell between cars; died in hospital next day.
	15.	Thomas McAndrews,	Driver,	15			Hyde Park shaft mines,	5th ward, Scranton,	Kicked by a mule; died on 27th.
	16.	Joseph Ludka,	Mine laborer,	22	1		Bellevue slope mines,	Lackawanna township,	Killed instantly by a fall of top coal.
	24.	Thomas Meehan,	Mine carpenter,	35	1	6	Eddy Creek mines,	Olyphant borough,	Killed instantly by a runaway car on plane.
	25.	John Nicholas,	Pump runner,	21			Stafford Brook mines,	Lackawanna township,	Seriously injured; fell off ladder in shaft; died on 22d.
	26.	Noble Atherton,	Miner,	33	1	1	Jermyn No. 3 mines,	Dickson City borough,	Left leg broken and right hip bruised by a fall of a rock bell; died on 27th.
	29.	Dominick Kearns,	Slate picker,	12			National breaker,	20th ward, Scranton,	Found dead; it was supposed he was playing around empty dump car and was caught.
Oct.	6.	Samuel Nimo,	Outside laborer,	29			Forest City breaker,	Forest City bor., Susq. co.,	Seriously injured by being struck by a piece of timber on head; died next day.
	7.	Thomas Courtney,	Miner,	50	1	8	Marvine shaft mines,	1st ward, Scranton,	Killed instantly by a fall of bony coal.
	13.	Elitt Marsh,	Mine car runner,	17			Pyne shaft mines,	Lackawanna township,	Seriously injured by being caught between car and chutes; died 13 hours after.
	15.	William Wedroff,	Mine laborer,	23			No. 2 shaft, Forest City,	Forest City bor., Susq. co.,	Killed by a fall of rock.
	15.	William Durkin,	Mine car runner,	19			Continental shaft mine,	Lackawanna township,	Seriously injured by being run over by car; died on same day.
	16.	Daniel Dyer,	Miner,	58	1	5	Diamond Tripp shaft,	21st ward, Scranton,	Seriously injured by a premature blast; died on 17th.
	22.	James McGee,	"	60			Pierce slope and tunnel,	Archbald borough,	Killed by a fall of top coal.
	23.	John Ruddy,	Driver,	15			Green Ridge slope,	Dunmore borough,	Seriously injured by being squeezed between car and pillar; died on 24th.
Nov.	13.	Fred. Lorens,	Mine laborer,	25			Spencer's shaft mines,	" "	Killed by a fall of coal; wife and 4 children in Italy.
	17.	John Davis,	" "	23			Eddy Creek shaft mines,	Olyphant borough,	Seriously injured about body by a fall of rock; died on same evening.
	21.	Patrick O'Hora,	Miner,	56		7	Shaft No. 5 Pa. Coal Co.,	Dunmore borough,	Killed by a fall of roof.
	26.	Wm. J. Thomas,	Track layer,	52	1	10	Bellevue slope mines,	Lackawanna township,	Killed instantly by a fall of rock roof.
	28.	James Y. Murphy,	Miner,	62	1	8	Meadow Brook shaft mines,	20th ward, Scranton,	Killed by a fall of top coal.
Dec.	5.	Jos. Williams,	"	56	1	1	Diamond Tripp shaft mines,	21st ward, Scranton,	Killed by a premature explosion of a blast.

TABLE IV—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident.
Dec. 6,	Robert McLean,	Miner,	40	1	4	Jermyn No. 4 shaft mines,	Dickson City borough,	Seriously injured by a fall of rock roof; died same evening.
10,	David Jones,	Driver,	16	..	..	Clifford shaft,	Forest City bor., Susq. co.,	Seriously injured by being caught by a runaway trip of cars; died 3 days after.
17,	Nelson Moon,	"	18	..	..	Manville colliery,	13th ward, Scranton,	Seriously injured by being kicked by a mule; died 15 minutes after.
17,	Joseph Dobrosky,	Laborer,	25	..	..	Simpson mines,	Fell township,	Killed by a fall of rock.
	64 deaths.		..	28	132			

Falls of roof,	19 equal to 29.68 per cent.	Caught by cars in mines,	6 equal to 9.37 per cent.	Caught by cars outside,	1 equal to 1.56 per cent.
Falls of coal,	13 equal to 20.32 per cent.	Explosion of CH gas,	1 equal to 1.56 per cent.	Killed in breakers,	2 equal to 3.13 per cent.
	32 50.00 per cent.	Blasting and powder explosions	4 equal to 6.25 per cent.	Boiler explosions,	5 equal to 7.81 per cent.
		Killed by mules,	3 equal to 4.69 per cent.	Falling down shafts,	7 equal to 10.94 per cent.
			14 21.87 per cent.	Miscellaneous,	3 equal to 4.69 per cent.
					18 28.13 per cent.

TABLE V—*List of Non-Fatal Accidents occurring in the Mines of the First Anthracite District for the year ending December 31, 1890.*

Date of accident.	Name of Person Injured.	Age.	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident in brief.
Jan. 4.	James Casey,	35	Hampton mines,	Lackawanna township,	Leg broken by fall of roof.
11.	William Bird,	28	Capouse mines,	Twenty-first ward, Scranton,	Shoulder-blade fractured by a fall of roof.
13.	Thomas Phillips,	46	Storrs mines,	Dickson City borough,	Slightly injured by a fall of top bony coal.
13.	John Labor,	44	Clifford mines,	Forest City bor., Susq. co.,	Half his foot blown off by an explosion of Atlas powder.
16.	Patrick Ryan,		Marvine mines,	Scranton,	Slightly injured by a fall of roof.
20.	Bartley Hoban,	16	Leggitt's Creek mines,	"	Hip-joint dislocated by being caught between car and pillar.
20.	Martin Mullen,	21	Dickson mines,	"	Slightly injured on side; cars ran on him.
21.	Anthony Tonery,		Marvine mines,	"	Back and shoulder slightly injured by a fall of top coal.
22.	John McKinzie,	16	Von Storch Clark vein,	"	Leg fractured; a mule fell on him.
22.	John Fatson,	24	Mt. Jessup boiler-house,	Winton borough,	Slightly scalded; caused by two boilers exploding.
24.	Martin Butler,	14	White Oak breaker,	Archbald borough,	Little finger mashed; car wheel run over it.
25.	Anthony Thornton,	33	Erie shaft mines,	Mayfield borough,	Head slightly injured; a small piece of rock fell on it
25.	Ebnezer Jones,	16	Lackawanna Coal Co. mines,	Blakely borough,	Leg fractured by a fall of roof.
30.	Patrick Finnigan	14	Von Storch breaker,	Scranton,	Seriously injured; was wound round shafting in breaker and fell
30.	John Gallagher,	29	Von Storch Clark vein,	"	Slighty injured by a fall of bony coal.
Feb. 3.	William Hull,	51	Marshwood mines,	Olyphant borough,	Leg fractured by a fall of roof.
7.	Mike Cornelius,		White Bridge tunnel,	Carbondale City,	Slightly injured; cartridge exploded while he was handling it.
7.	William Gannon,	23	Archbald shaft mines,	Lackawanna township,	Injured slightly by being struck by a piece of coal from blast.
8.	John Riley,	52	Meadow Brook tunnel,	Scranton,	Head and shoulders severely injured by a fall of top coal.
8.	Henry Deihl,	25	Mount Pleasant mines,	"	These men were walking up the ladders in air shaft coming out of mines, and when opposite the New County vein a gas blower ignited; Deihl burned slightly on hands and face, Davis and Rodway on hands and Green slightly on face.
8.	David Davis,	25			
8.	Alf Rodway,	36			
8.	M. T. Green,	45			
8.	John Jordan,	50	Oxford shaft mines,	"	Slightly injured by a fall of bony coal.
8.	Z. T. Krieger,	45	Lackawanna Coal Co. mines,	Blakely borough,	Krieger, the mine foreman, had just passed through the chamber and gave orders to stand a prop that was dislodged by a blast. He went only a short distance when he heard the fall; he then returned and he and the others were in the act of taking O'Neffery out when a second fall came and caught them.
8.	Peter Popin,	30			
8.	Frank Brosdofski,	30			
11.	John Robertson,		Dickson Clark vein,	Scranton,	Both these men were slightly burned by an explosion of gas; there was a fall which forced the gas on their naked lights.
11.	James Claney,				
12.	Isaac Evans,	26	Mount Pleasant mines,	"	Leg fractured and head cut by being struck by safety carriage in shaft.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident in brief.
Feb. 15.	John H. Evans,	55	Manville shaft mines,	Scranton,	Both these men were slightly burned by an explosion of gas in the next chamber to them; there was no gas where they worked.
15.	Daniel Jones,	30			
20.	Michael O'Neil,	32.	Cayuga shaft mines,	"	Slightly injured by a piece of rock falling on him from side to bottom of shaft, where he was working as a sinker.
20.	Thomas Shoveling,	15	Coal Brook barn,	Carbondale City,	Wrist broken; he slipped off a mule while taking him out of barn.
Mar 5.	John Hartman,	16	Pine Brook mines,	Scranton,	Slightly injured by being kicked by a mule.
5.	Charles Allen,	25	Marshwood mines,	Olyphant borough,	Injured slightly by a fall of roof.
6.	Frank Burns,	19	Erie shaft mines,	Mayfield borough,	Leg fractured; was riding on car, when it jumped the track and caught him.
7.	Michael Glancey	61	Sloan shaft mines,	Lackawanna township,	Back and hips injured by a premature explosion of a blast.
10.	Mike Fortuna,	28	Green Ridge slope mines,	Dunmore borough,	A cartridge stuck in the hole; the miner took his drill and was in the act of forcing it into the hole when it exploded.
10.	John Polesser,	38			
13.	John Dubouski,	34	Simpson slope mines,	Fell township,	Arm fractured by being struck by coal from a blast.
14.	Thomas T. Morgan,	38	Pancoast shaft mines,	Dickson City borough,	Slightly injured by the premature explosion of a blast.
15.	Geo. Ross,	41			
15.	Henry Fenwick,	45	Simpson boiler-house,	Fell township,	Slightly scalded by a nest of boilers exploding.
15.	John Malonskey,	17			
19.	John Evans,	55	Erie shaft mines,	Mayfield borough,	Scalp wound by being struck by runaway car.
19.	Thomas G. Davis,	34	Jermyn No. 4 mines,	Dickson City borough,	Left leg and arm broken; set off gas while lighting his match.
19.	Wm. McDonnell,	24	Jermyn No. 3 mines,	" "	Forehead severely cut; he tried to stop a car at breaker with a bar and it slipped and struck him.
20.	John Anguinn,	50	Jermyn No. 4 mines,	" "	Right leg fractured by a fall of roof while standing a prop.
26.	John Quinn,	20	Green Ridge slope mines,	Dunmore borough,	Both these men were injured by a runaway trip of cars while going down a slope to work in the morning.
26.	James O'Connors,	22			
27.	Edward McAnulty,	34	Simpson slope mines,	Fell township,	Injured on back by a fall of rock roof.
April 4.	Henry Davis,	40	Mt. Pleasant shaft mines,	Scranton,	Slightly burned on hands and face from a burning gas blower.
7.	James Doud,	48	Erie shaft mines,	Mayfield borough,	Severely burned on hands, face and feet by an explosion of powder in box while he was working near it.
8.	Thomas Logan,	30	Storrs Clark vein,	Dickson City borough,	Severely injured by a fall of bony coal.
9.	Noah Thomas,	17	Pancoast shaft mines,	" "	Severely injured; he stumbled and fell in front of loaded car in mines.
14.	John C. Jones,	20	Hyde Park shaft mines,	Scranton,	Leg badly bruised below the knee by being caught by mine car.
16.	Micheal Cafferty,	34	Green Ridge slope ridge,	Dunmore borough,	Severely injured; a link broken in trip they were hoisting and it ran back down the slope and caught him.
17.	David T. Jones,	49	Oxford shaft mines,	Scranton,	Elbow-joint fractured by a fall of rock.
17.	John Hughes,	16	" " "	"	Flesh wound on arm eight inches long; caught between car and roof.
22.	Patrick Moran,	26	Cayuga shaft mine,	"	Back severely injured by a fall of rock roof.

	22.	John Mitchell,	51	Pancoast shaft mine,	Dickson City borough,	Right leg fractured by a fall of bony coal.
	23.	Thomas Early,	16	Diamond Tripp shaft,	Scranton,	Arm slightly injured by a fall from a mule.
	25.	John Taylor,	30	Bellevue breaker,	Lackawanna township,	Neck and back sprained; timber rolled on him off a wagon.
	25.	Nicholas Varla,	35	Continental shaft mines,	" "	Left leg sprained and twisted by a fall of roof.
	28.	Michael Ruddy,	16	Pine Brook shaft mines,	Scranton,	Slightly injured; he fell under a loaded car in mines.
	29.	John Regan,	25	Pancoast shaft mines,	Dickson City borough,	Hip dislocated by being struck by runaway car in mines.
May	1.	Evan J. Evans,	51	Holden shaft mines,	Lackawanna township,	Head injured by being struck by a falling collar in mines.
	1.	Martin Cusick,	16	National shaft and slope mine,	Scranton,	Leg fractured; jumped out of moving car on slope.
	3.	Alexander Zemoveg,	26	Von Storch 14-foot vein,	"	Back and head severely injured by a fall of rock
	3.	Michael Bigley,	20	No. 1 shaft, Del. & Hud. C. Co.,	Carbondale City,	Right leg fractured below knee; a piece of coal rolled on it.
	5.	John Lucan,	35	Brisbin shaft mines,	Scranton,	Slightly injured about head and limbs by a fall of roof.
	6.	Wm. T. Williams,	40	Dodge shaft mines,	Lackawanna township,	Face slightly burned by an explosion of gas.
	6.	Frank Green,	17	Green Ridge slope mines,	Dunmore borough,	Both injured by coal flying from a blast fired by Joseph Elerish, who it seems did not give the proper notice.
	6.	William Cassidy,	17			
	8.	John Bulland,	28	Diamond Tripp shaft mines,	Scranton,	Hands and face slightly burned by an explosion of gas.
	8.	Steven Thomas,	40	Oxford shaft mines,	"	Foot slightly injured by a fall of roof.
	9.	John B. Evans,	29	Pine Brook mines,	"	Back slightly injured by being struck by flying coal from a blast.
	9.	Joseph McDonald,	17	" "	"	Face slightly injured by being kicked by a mule.
	16.	Thomas W. Thomas,	15	Diamond Tripp shaft mines,	"	Face injured by being kicked by a mule.
	17.	David D. Price,	55	Capouse shaft mines,	"	Seriously injured by a fall of roof.
	21.	Anthony Loftus,	40	Dickson shaft mines,	"	Face and hands burned; a cartridge which he had in his hands exploded.
	26.	John Hall,	51	National mines,	"	Slightly burned by an explosion of gas.
	28.	Richard Morgan,	17	Hampton shaft mines,	Lackawanna township,	Two fingers mashed by being caught between bumpers of cars.
	28.	John Shaughnesy,	40	Mt. Pleasant shaft mine,	Scranton,	Face slightly burned by an explosion of gas.
	29.	Mathew Riley,	40	Manville shaft mines,	"	These men were working together and set off a blast and went into next chamber for safety and went opposite to the point where the shot was fired and it broke through the pillar.
	29.	Daniel Riley,	50			
June	2.	Hugh Gormley,	24	Central shaft mines,	"	These men were working together; Jones fired a blast and went to a place of safety; Wm. Griffiths, working in next place fired a blast at the same time; his shot went off and Jones thought it was his, and his laboror and himself returned, and when close to the face their shot went off, fracturing Gormley's skull and breaking Jones' arm. Gormley is seriously injured.
	2.	William R. Jones,	24			
	2.	Tallie Phillips,	16	Hyde Park shaft mines,	"	Collar-bone fractured; mule fell on him.
	2.	Patrick Kenny,	15	Hampton shaft mines,	Lackawanna township,	Seriously injured by being squeezed between car and rib.
	3.	Mike Walsh,	24	Coal Brook tunnel,	Carbondale City,	Arms burned by cartridge exploding in the miner's hands.
	3.	Dominck Albert,	40	S. V. White tunnel,	Winton borough,	Nose fractured by flying coal from his own blast.
	4.	Martin McDonagh,	17	Archbald shaft mines,	Lackawanna township,	Body and legs bruised by falling off bumpers in front of it.
	4.	Michael Bradley,	16	Manville shaft mines,	Scranton,	Back, hands and back of head burned by an explosion of gas.
	5.	William Davies,	19	Grassy Island shaft mines,	Olyphant borough,	Caught between top rail of car and roof; he was on the car and it jumped the track.
	5.	Stephen Fitzpatrick,	56	Dolph tunnel mines,	Winton borough,	Compound fracture of the hip by being struck by flying coal from blast.
	7.	Jacob Yerka,	38	Jermyn No. 4 shaft mines,	Dickson City borough,	Seriously injured while re-standing a prop; roof fell on him.
	9.	John Ford,	17	Dodge shaft mines,	Lackawanna township,	Leg badly bruised; truck ran on it.
	9.	James Davis,	32	Sloan shaft mines,	" "	Severely injured by a premature explosion of a blast.
	9.	Thomas M. Evans,	30	Mt. Pleasant shaft mines,	Scranton,	Arm fractured by flying coal from a blast.
	11.	Anthony Ruggan,	22	Capouse shaft mines,	"	Slightly injured by a fall of roof.
	11.	Louis Wentle,	30	Simpson slope mines,	Fell township,	Seriously injured by a fall of coal.
	14.	Wm. F. Morgan,	32	Capouse shaft mines,	Scranton,	Thigh fractured in two places by a fall of roof.
	14.	John Clarke,	16	Hyde Park shaft mines,	"	Arm fractured by being caught between door and car.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident in brief.
June 16,	Thomas Murphy,	60	Von Storch Diamond vein,	Scranton,	Left leg fractured by being struck by a collar that was forced out of place by a roof falling at the time.
17,	John H. Jefferies,	15	Hyde Park shaft mines,	"	Both legs badly bruised; caught between car and pillar.
19,	Edward Loftus,	27	Von Storch Diamond vein,	"	Three fingers badly mashed on left hand by a fall of roof.
20,	Patrick Horan,	42	Pine Brook shaft mines,	"	Knee badly bruised by a fall of bony coal.
20,	James Josephs,	50	Diamond No. 2 shaft mines,	"	Ribs broken; he thought a shot had missed, but it exploded and he was struck by coal.
21,	Thomas J. James,	55	Taylor mines,	Lackawanna township,	Arm broken and otherwise injured by the premature explosion of a blast.
21,	Benjamin Hughes,	58	Dodge shaft mines,	" "	Hip slightly injured by being struck by tie slipping from gob on him.
21,	Robert Hearn,	42	Simpson slope mines,	Fell township,	Head and shoulders badly bruised by a fall of top coal.
23,	Patrick Narey,	16	Leggitt's Creek shaft mines,	Scranton,	Small bone in leg broken by being caught between pillar and car.
23,	Abe Fox,	15	Clifford shaft mines,	Forest City bor., Susq. co.,	Two fingers cut off by being caught between door and top rail of moving car.
24,	Thomas McHale,	37	Capouse shaft mines,	Scranton,	Slightly injured by a fall of bony coal.
24,	Frank Mullany,	16	" "	"	Hand squeezed between mine cars.
24,	John Brady,	17	Von Storch Clark vein,	"	Right leg fractured above the knee by being caught between two cars.
25,	Arthur Evans,	16	Continental shaft mines,	Lackawanna township,	Foot slightly injured by being caught in track and a car running on it.
25,	Moses Davis,	56	Forest City slope mines,	Forest City bor., Susq. co.,	Head slightly injured by a fall of roof.
26,	William Danniels,	34	Stafford shaft mines,	Lackawanna township,	Slightly injured by a fall of roof.
27,	John Cummings,	16	Sloan shaft mines,	" "	Leg broken between ankle and knee by being caught between car and rib.
July 9,	Anthony Lynch,	16	Bellevue mines,	" "	Slightly injured by being squeezed between rib and cars.
9,	Michael Tighe,	39	Erie shaft mines,	Mayfield borough,	Back and shoulders slightly bruised by being run over by an empty car.
9,	Charles Witzgage,	35	Marvine shaft mines,	Scranton,	Shoulders and back injured slightly by fall of rock.
10,	John W. Richards,	43	Capouse shaft mines,	"	Arm broken by a fall of rock.
11,	Michael Figg,	26	Erie shaft mine,	Mayfield borough,	Injured by a fall of a rock bell.
11,	Andrew Pakes,	30	" "	"	Injured by same fall.
15,	Henry J. Evans,	...	Grassy Island shaft mines,	Olyphant borough,	These men were working together when a rock bell fell without warning, injuring them; Evan's shoulder was dislocated.
15,	Neal O'Boyle,				
17,	Frank Sweeney,	16	Brisbin shaft mines,	Scranton,	Injured by being kicked by a mule.
17,	Mike Undik,	45	Holden shaft mines,	Lackawanna township,	Slightly injured by being struck by a piece of falling roof.
17,	John Hamplesky,	40	Jermyn No. 3 shaft mines,	Dickson City borough,	Knee cut; he went back too soon and got struck by flying coal from blast.

18.	Robert Owens,	34	Bellevue shaft mines,	Lackawanna township,	Struck on head, shoulder and ribs by balance weight in shaft.
19.	John Dynaon,	20	Green Ridge slope mines,	Dunmore borough,	Slighting injured by being shot through a pillar.
21.	John Zane,	16	Eaton tunnel mines,	Archbald borough,	Hand slightly injured by being caught between top rail of car and roof.
22.	Thomas Evans,	50	Holden shaft mines,	Lackawanna township,	Injured on back by a fall of coal.
25.	John Cawley,	52	Capouse shaft mines,	Scranton,	Back injured by a fall of rock.
26.	Charles Rhoda,	23	Jermyn No. 1 shaft mines,	Jermyn borough,	Leg broken; coal burst out of rib and struck him on the leg.
26.	Matt. Murchulite,	54	Edgerton tunnel mines,	Archbald borough,	Leg fractured by a fall of six-inch rock which ran to a feather edge all round the piece.
28.	Jacob Lynch,	48	Forest City slope,	Forest City bor., Susq. co.,	Seriously injured; fall of rock.
Aug. 1.	Thomas Murray,	55	Lackawanna Coal Co. mines,	Blakely borough,	Leg fractured; fall of top coal.
2.	Peter Brady,	50	Marshwood mines,	Olyphant borough,	Slightly injured; fall of slate.
6.	Michael Dyer,	60	Diamond Tripp mines,	Scranton,	Face badly cut by flying coal from his own blast exploding prematurely.
11.	Martin Coleman,	13	Leggett's Creek breaker,	"	Arm fractured; he was swinging on an iron bar and fell.
12.	James Barrett,	30	Marvine shaft mines,	"	Leg fractured between the knee and hip by a fall of top coal.
12.	Mike Killeullen,	15	Eddy Creek shaft mines,	Olyphant borough,	Left Leg fractured by a fall of bony coal.
14.	John Schlaby,	43	Pyne shaft mines,	Lackawanna township,	Slightly injured on back, shoulder, ankle and right foot by a fall of roof.
14.	John Size,	30	Green Ridge slope mines,	Dunmore borough,	Slightly injured by a fall of black head rock.
14.	Mike Flynn,	24	" "	" "	Large flesh wound on arm by being struck by flying coal from a blast.
15.	David Bowers,	38	Hyde Park shaft mines,	Scranton,	Slightly injured by a fall of roof.
15.	Joseph Coverdousky,	37	Pancoast shaft mines,	Dickson City borough,	Slightly injured by a fall of bony coal.
21.	James Caviston,	18	Coal Brook tunnel mines,	Carbondale City,	Bad scalp wound; fell in front of car that had jumped the track and struck him.
22.	Thomas Gannon,	22	Lackawanua Coal Co. mines,	Blakely borough,	Leg fractured by being caught between bumpers of cars.
27.	Charles Smith,	23	Dodge shaft mines,	Lackawanna township,	Temple badly cut by a fall of rock.
28.	John Comerford,	47	Von Storch Clark vein,	Scranton,	Head and hand severely cut and body bruised by a fall of top bony coal.
29.	John H. Lewis,	64	Von Storch Rock vein,	"	Left shoulder bone fractured by a fall of rock.
30.	John Loftus,	55	Von Storch Diamond vein,	"	Ribs broken and two gashes on head; he was caught between cars.
Sept. 3.	Hudro Mendek,	42	Forest City breaker,	Forest City bor., Susq. co.,	Hand injured; necessitating amputation by being caught between large railroad cars.
3.	William H. Davis,	15	Dodge shaft mine,	Lackawanna township,	Both legs broken; cars ran over him.
4.	James Williams,	25	Eddy Creek shaft mine,	Olyphant borough,	Slightly injured by a fall of rock.
8.	Col. Siegel,	18	Potts shaft mine,	Dunmore borough,	Leg fractured below knee; he was struck by wire rope at head of outside plane.
10.	Pasco Gerr,	13	" "	" "	Both legs fractured by being caught in breaker machinery.
10.	Thomas Tuttle,	17	Clifford shaft mine,	Forest City bor., Susq co.,	Seriously injured; bone over eye fractured by being kicked by a mule.
13.	John E. Hughes,	55	Jermyn No. 4 shaft mines,	Dickson City borough,	Head slightly injured by the fall of a small piece of rock.
13.	Jerome Sykes,	19	" "	" "	Head slightly injured by same fall.
13.	William McCann,	19	Lackawanna Coal Co. mines,	Blakely borough,	Hip squeezed by being caught between car and rib.
15.	Thomas Clarke,	35	Dickson shaft mines,	Scranton,	Face and hands cut by flying coal from a blast.
15.	Thomas Hodgson,	50	Grassy Island shaft mines,	Olyphant borough,	Left arm broken and left knee joint dislocated by a fall of rock.
16.	Wadeck Salonski,	14	Bellevue breaker,	Lackawanna township,	Seriously injured; fell in breaker a distance of forty feet.
16.	James T. Nallon,	32	Taylor mines,	" "	Slightly injured; fall of top coal.
17.	Henry Lloyd,	40	Bellevue shaft mines,	" "	Leg bone injured by a fall of rock.
20.	John Maione,	19	Eaton colliery,	Archbald borough,	Slightly injured by being struck by a car on culm plane.
22.	William Worman,	40	Diamond shaft mines,	Scranton	Arm slightly injured by a fall of roof.
22.	George Phillips,	43	Hyde Park shaft mines,	"	Thumb cut off by a fall of coal.
22.	Mike Busick,	22	Simpson slope mines,	Fell township,	Slightly squeezed on hips and back by being caught between cars.
22.	John Williams,	18	Grassy Island shaft mines,	Olyphant borough,	Badly injured by being squeezed by cars.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident in brief.
Sept. 27.	Thomas Morgan,	24	Capouse shaft mines,	Scranton,	Thigh fractured by a fall of roof.
Oct. 3.	Michael Gogles,	30	Diamond shaft mines,	"	Instep slightly bruised; a loaded car struck it.
5.	Martin Healy,	43	Sloan shaft mines,	Lackawanna township,	Sides and ribs badly bruised; caught between cars.
6.	William Seely,	47	Continental shaft mines,	" "	Leg fractured between knee and ankle by being struck by a car.
7.	Thomas Langan,	16	Grassy Island shaft mines,	Olyphant borough,	Large gash on forehead; kicked by a mule.
7.	John Sullivan,	18	Von Storch Clark vein,	Scranton,	Right arm broken by being caught by a car.
7.	Edward Moran,	35	Cayuga shaft mines,	"	Head injured by a fall of top bony coal.
14.	Thomas J. James,	17	Capouse colliery mines,	"	Slightly injured outside by being caught between two cars.
14.	Michael O'Neil,	16	Holden mines,	Lackawanna township,	One finger cut off by being run over by a car.
16.	John Reddy,	45	Von Storch Clark vein,	" "	Injured slightly by a fall of top coal.
16.	Robert Coates,	47	Rush Brook tunnel,	Archbald borough,	Hips slightly squeezed between car and pillar.
17.	Retus C. Bohner,	23	Rush Brook shaft,	" "	Leg slightly bruised by being caught between empty and loaded cars.
17.	Anthony Yousk,	27	Simpson slope mines,	Fell township,	Leg fractured by a fall of roof.
17.	John Bowden,	50	Glenwood shaft mines,	Mayfield borough,	Four ribs broken; a mule knocked him down and the car ran over him.
21.	John Everart,	15	Grassy Island shaft mines,	Olyphant borough,	Slightly injured by being caught between car and rib.
21.	Martin Mackin,	40	Taylor shaft mines,	Lackawanna township,	A piece of coal fell on drill and struck him on the leg; slightly injured.
21.	Michael Hart,	40	Cayuga shaft mines,	Scranton,	These men were working together; Hart the miner fired a blast and it knocked out two props; were restanding them when fall came.
21.	Thomas McLaughlin,	20	" "	"	
23.	Seth Smith,	30	Leggett's Creek shaft mines,	"	Slightly injured by being struck by a piece of coal from blast.
27.	John W. Ward,	29	Continental shaft mines,	Lackawanna township,	Arm fractured by a fall.
28.	John Weibel,	19	Taylor shaft mines,	" "	Both legs fractured by a fall of roof.
28.	John Smith,	40	Meadow Brook tunnel,	Scranton,	Leg fractured; a mule fell on him and broke his leg.
31.	Charles Cyphers,	20	Simpson slope mines,	Fell township,	Left leg broken six inches above the ankle by being caught between cars.
Nov. 1.	Thomas Powell,	14	Capouse shaft mines,	Scranton,	The boy was running and he fell and broke his wrist.
3.	Patrick McCarty,	33	Simpson colliery,	Fell township,	Four fingers cut off; a locomotive ran over them.
3.	Andrew Corby,	45	Simpson slope mines,	" "	Ankle sprained by a fall of coal.
5.	John Hopkins,	20	Simpson breaker,	" "	Leg cut off at ankle; caught in small rolls in breaker.
8.	Peter Ruff,	42	Hampton shaft mines,	Scranton,	Back and ribs seriously injured by a fall of roof.
8.	D. S. Evans,	52	Manville shaft mines,	"	Head and leg slightly injured by being struck by coal from a blast.
11.	Andrew Stevenski,		Pierce slope mines,	Archbald borough,	Slightly injured by a fall of coal.
12.	Thomas Dougherty,	30	Shaft No. 5 Penna. Coal Co.,	Dunmore borough,	Slightly injured by being caught between two cars.

	14.	Michael Cunnion,	17	Gypsey Grove, Penna. Coal Co.,	" "	Leg fractured; a trip of cars struck a loose board which struck his leg.
	19.	Patrick McColligan,	30	Sloan shaft mines,	Lackawanna township,	Slightly injured by an explosion of gas.
	22.	John Lock,	30	Lackawanna Coal Co. breaker,	Blakely borough,	Arm cut off; caught between cars under breaker
	22.	John McHale,	23	Marvine shaft mines,	Scranton,	Slightly injured by a fall of top coal.
	25.	Peter Kelley,	16	Leggett's Creek shaft mines,	" "	Arm fractured by a fall of gob.
	25.	William J. Thomas,	38	Continental shaft mines,	Lackawanna township,	Ankle fractured by a fall of stone roof.
	26.	Frank Dack,	24	Eddy Creek shaft mines,	Olyphant borough,	Right leg fractured by a fall of coal.
Dec.	1.	Dan Robison,	31	Olyphant No. 2 shaft mines,	" "	Back slightly injured by a fall of a bell from rock roof.
	5.	Edward Haynes,	29	Capouse shaft mines,	Scranton,	Legs slightly injured by being struck by coal from blast in next chamber.
	6.	Peter Janauschek,	27	Jermyn No. 4 shaft mines,	Dickson City borough,	Slightly injured by a fall of rock roof.
	12.	Thomas Healy,	24	Von Storch slope mines,	Scranton,	Left arm broken; slipped on rail in front of car and was run over.
	13.	John McCoy,	30			A gas blower took fire and set the coal on fire; men were sent to extinguish the fire, when their lights ignited the gas that had accumulated, McCoy and Ludwig were slightly burned on hands and face. Gallagher, Reese and Higgins slightly burned on hands, face and back.
	13.	Michael Gallagher,	35			
	13.	Lot Ludwig,	26	Diamond Tripp shaft,	Scranton,	
	13.	William Reese,	35			
	13.	Michael Higgins,	30			
	15.	Wm. Bartholemy,	35	Edgerton mines,	Jermyn borough,	Severely cut on back of foot by a fall of coal.
	15.	Joseph Lingo,	29	Erie mines,	Mayville borough,	Hip bruised; fall of a rock bell.
	16.	Wm. E. Reese,	55	Continental mines,	Lackawanna township,	Both these men were in the act of barring down bony coal when a piece fell; Reese had his left leg fractured.
	16.	John W. Ward,	30	" "	" "	
	19.	Absolam Arnold,	37	Storr's colliery,	Dickson City borough,	Fell from a trestling, a distance of thirty feet; head and arms hurt.
	20.	John Munley,	27	Pancoast mines,	" "	Seriously injured by a fall of roof.
	22.	James Fagan,	17	Dolph mines,	Winton borough,	Shoulder dislocated by being squeezed between car and prop.
	23.	John Scott,	31	Sloan mines,	Lackawanna township,	Face and hands slightly burned by an explosion of gas.
	23.	John Friolas,	30	Meadow Brook mines,	Scranton,	Both these men were slightly injured by being shot through a pillar; they were warned but paid no attention to it.
	23.	Lawrence Bulgary,	30	" "	"	
	23.	Thomas Reese,	21	Riverside shaft,	Archbald borough,	Leg fractured; he fell down the shaft about thirty-five feet.
	27.	David M. Morgan,		Grassy Island shaft, D. and H.,	Olyphant borough,	Slightly injured by a fall of rock roof.
	29.	Thomas Mason,	15	Eddy Creek shaft, D. and H.,	" "	Two fingers cut off by being caught under car wheel.
	29.	Frank Schnurr,	29	Capouse shaft,	Scranton,	Both legs fractured by a fall of rock roof.
	29.	Wm. Kerrigan,	19	Cayuga breaker,	"	Jaw bone fractured by being struck by a crow-bar while in the act of stopping a large railroad car at breaker.
	29.	Edward Lewis,	32	Diamond No. 2 shaft,	"	Slightly injured while running away from a blast.
	31.	John Lewis,	50	Hyde Park shaft,	"	Arm fractured by being struck by a falling timber.

NOTE.—There were 241 non-fafal accidents in the year 1890.

TABLE VI—*Showing the condition of Ventilation in all the Collieries in the First Anthracite (or Scranton) District including almost all of Lackawanna and a portion of Wayne and Susquehanna counties, Pennsylvania, for year ending 31st day of December, A. D. 1890.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN		Revolutions of fan per minute.	Dimensions or area of furnace grate.	Heighth of heated column of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE		
			Diameter in feet.	Width of face in feet.					At intake.	At face of workings.	At outlet or upcast.
Del., Lack. and Western R. R. Co.											
Archbald shaft.	John Wrist.	Fan.	12	3½	150			⅝	132,654	21,868	145,169
	Thomas Butler.	"								22,680	
	Wm. P. Jones.	"								19,890	
	Rees Williams.	"								31,228	
	James Stevens.	"								20,678	
	Rock vein.	"							12,450	12,242	12,639
									145,104	128,586	157,808
Bellevue shaft.	A and I.	Fan.	16	4½	110			1.7	145,726	15,688	
	B and C.	"	14	4	110					30,876	
	J and M.	"								34,122	
	S and S.	"								48,988	
	N and V.	"								10,100	160,855
									145,726	139,774	160,855
Bellevue slope.	I, H, F.	Fan.	14	4	100			1	60,000	26,000	
	G and E.	"								21,105	
	K and L.	"								11,160	62,243
									60,000	58,265	62,243

Brisbin shaft.	John Watkins, Clark vein.	Fan.	14	4	124	.6	39,134	16,968	
	Wm. C. Davis, Clark vein.	"						16,632	
	Benjamin Williams, Clark vein.	"					21,420	20,244	
	Michael Kelly, Clark vein.	"					20,276	20,010	
	James H. Davis, Clark vein.	"					15,912	15,168	105,720
	John Watkins, G vein.	"					12,420	10,550	
	James Roberts, G vein.	"					20,000	19,174	35,880
							129,162	118,746	141,600
Continental shaft.	Wm. J. Hughes.	Fan.	14	4	116	.9	152,700	5,040	
	Christ. Jones.	"						19,110	
	Wm. E. Rees.	"						21,600	
	Pat. Hogan.	"						19,800	
	Pat. Cannon.	"						11,025	
	John Evans.	"						22,785	
	Hyde Park.	"						14,400	
	New County.	"						17,250	179,860
							152,700	130,410	179,860
Central shaft.	Moyle's gangway.	Fan.	14	3½	136	1.4	100,352	15,642	
	Clark vein.	"	14	4	132	1.3		23,141	
	A, B and E, Clark vein.	"						14,945	
	S and W, Clark vein.	"					12,852	12,474	
	West Side.	"					13,650	13,650	103,750
	Locomotive road.	"						15,104	
	X and F.	"						21,087	
	P, T and R.	"						11,269	
	Rock vein.	"					20,928	15,900	
	C.	"					27,664	7,200	
	Hampton road.	"						5,616	109,279
							175,446	156,028	213,028
Cayuga shaft.	John Stanton.	Fan.	12	3½	140	1.3	45,550	20,250	
	George Burtch.	"						20,340	46,850
	Patrick McGuire.	"					23,550	20,350	24,240
	Clark vein.	"					34,210	33,300	33,600
							103,310	94,240	104,690
Dodge shaft.	B.	Fan.				1.2	45,854	17,706	
	G and K.	"						33,132	
	E and H.	"					74,443	30,528	
	F.	"						21,312	
	A.	"					59,786	14,985	53,280
	C.	"						25,688	62,580
	S.	"						20,336	79,497
							179,983	163,787	195,357

TABLE VI.—*Continued.*

NAME OF COLLIERIES	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet	DIMENSIONS OF FAN. Width of face in feet	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	AMOUNT OF VENTILATION PER MINUTE. At face of workings.	AMOUNT OF VENTILATION PER MINUTE. At outlet or upcast.
Diamond No. 2 shaft,	No. 1 split,	Fan,	14	4	25			.4	34,690	32,700	
	No. 2 split,	"							34,280	34,200	83,000
									68,970	66,900	83,000
Holden shaft,	L. New County,	Fan,	25	8	45			.6	15,190	12,800	
	E. New County,	"							26,460	24,000	
	Barn,	"							5,880	5,880	
	Old workings,	"							7,700	7,880	
	A. rock vein,	"							18,450	16,500	62,400
	C. Clark vein,	"							37,440	33,550	
	D. Clark vein,	"							26,180	22,750	
	Barn vein,	"							9,730	9,730	77,040
									147,030	133,090	139,440
Hyde Park shaft,	R. T. Edwards' gangway,	Fan,	14	4	112			1.5	61,198	20,880	
	Clark vein,	"							14,785	12,835	
	New County vein,	"								20,518	73,031
	H. Thomas, Diamond vein,	"							29,492	24,634	31,580
									105,475	78,868	104,611
Hampton shaft	Rock vein, west,	Fan,	12	3½	131			.8	7,800	3,600	
	Wm. Richards,	"							9,840	7,560	
	Isaac Griffith's,	"								4,900	
	Thos. T. Richards,	"							38,540	11,520	
	Wm. H. Reese,	"								6,600	78,650
									56,180	34,180	78,650

Manville shaft	No. 1 Fan, Clark vein	No. 1 fan	20	5	56			$84,450	90,000	90,000
	No. 1 Fan, Bottom vein	"	20	5	56			39,480	8,700	9,100
	Peter Hartman	No. 2 fan	14	4	99			71,280	18,480	
	Peter Compters	"							24,080	
	Enoch Day	"							21,600	
	Wm. Harvey	"							28,700	108,650
								195,210	182,860	207,750
Oxford shaft	Dyer's road	Fan	14	4	130		1.2	22,468	21,180	
	"A" and "E"	"						15,379	15,120	
	"C"	"						15,600	15,280	
	"D"	"						29,740	28,215	97,500
	"B" and "C" Big vein	"						17,278	15,912	
	"E" do do	"						9,382	9,050	
	"D"	"						20,130	18,960	38,705
	"A"	"						16,870	15,770	17,875
								146,850	139,495	154,080
Pyne shaft	"R" and "E" gangway	Fan	14	4	120		.95	42,700	16,063	
	"W" and "J" do do	"						65,010	18,256	
	"J" and "D"	"							19,647	
	"W" and "R"	"							20,932	
	"J" and "H"	"							14,928	116,958
	"W" "D" and "N" "C"	"						24,700	22,336	25,476
								132,410	112,276	142,434
Sloan shaft	"K"	Fan						104,430	15,760	115,200
	"B"	"							25,007	
	"C"	"							13,872	
	"E"	"							15,610	
	"H"	"							15,000	
	"L"	"							14,413	
	"J"	"						36,000	16,000	38,000
	"R," "S" and old works	"							14,350	
								140,430	130,012	153,200
Stoors shaft	"A" split	Two fans	16	4½	86		.9	78,149	18,800	
	"B" do	"	16	6	54		.25		25,155	
	"C"	"							12,876	
	"D"	"							12,254	73,429
	East second opening	"						73,830	35,130	
	West second opening	"							38,700	79,050
	Drift opening	Natural ventilation						3,000	3,000	3,000
								154,979	145,925	155,479

TABLE VI—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	At face of workings.	At outlet or upcast.
Tripp, Diamond shaft	Robinson's split	Two fans	14	4	110				56,520	56,100	
	Brisbin split	"	14	4	115				30,240	30,000	
	Grogan split	"							31,025	30,250	
	Barn split	"							35,000	34,500	
	Rees split	"							34,980	34,300	140,800
	Phillips' split	"							38,500	38,100	124,950
									226,265	223,250	265,750
Taylor shaft	"S" split	Two fans	14	4	137				159,290	38,770	
	"B" split	"	14	4	137					32,900	
	"J" split	"								33,200	
	"R" split	"								27,560	
	Lower vein split	"								20,000	161,368
									159,290	152,430	161,368
Taylor drift	Intake	Fan	12	3½	100				26,320		
	M split	"								25,460	67,122
		Twenty-four fans							26,320	25,460	67,122
Delaware and Hudson Canal Co. Clinton slope and drift mines	South split	Fan	12	3½	76			.4	12,545	11,940	12,625
	North split	"							21,950	21,395	22,930
	Water Level split	"							12,640	12,585	12,640
									47,135	45,920	48,195

Coal Brook tunnel mines	South intake No. 1	Fan					.6	9,360	8,760	9,600
	West intake No. 2	"						9,000	7,770	9,870
	East intake No. 3	"						9,500	9,000	9,750
Lackawanna tunnel mines	North intake No. 4	"						7,200	7,200	7,200
Wilson Creek tunnel mines	Phillip's heading							21,750	13,750	25,000
	Emmett's heading	"						12,150	11,830	12,350
	Smith's heading	"						13,680	13,200	13,800
	Water Level heading	"						30,000	22,750	31,075
								112,640	94,260	118,645
Dickson shaft	East side No. 1 split	Fan	20	4½	82		.75	55,436		
	West side No. 2 split	"						74,790		132,390
	Plane heading No. 3	"							16,634	16,782
	Loftus heading No. 4	"							14,280	15,047
	Golden's heading No. 5	"							16,346	16,527
	Flynn's dip heading No. 6	"							38,954	38,760
	Slope E. No. 7	"							16,356	16,508
	Slope W No. 8	"							26,402	26,904
								130,126	129,072	132,390
Eddy Creek shaft	Murphy's heading No. 1	Fan	20	5	80		.6	20,450	18,200	21,700
	"E" No. 2	"						12,200	10,530	13,250
	North No. 3	"						18,250	15,000	19,350
	West No. 4	"						6,785	6,000	7,000
								57,685	49,730	61,300
Olyphant No. 2 shaft	South No. 1	Eddy creek fan					.6	14,250	14,700	15,625
	South No. 2	"						14,125	13,860	14,975
								28,375	28,560	30,600
Grassy Island shaft	North heading split	Fan	20	4½	65		.6	24,000	20,000	24,100
	South Plane split	"						24,200	22,000	24,300
	Slope No. 1 split	"						16,250	14,000	16,400
	Slope No. 2 split	"						20,050	19,900	21,250
								84,500	75,000	86,050
Jermyn No. 1 shaft	Rock plane east	Fan	17	4	72		.6	9,750	9,400	9,810
	Rock plane west	"						12,600	11,400	13,440
	Slope No. 1 split	"						16,800	14,760	18,480
	Slope No. 2 split	"						14,600	13,880	15,200
	Slope No. 3 split	"						13,500	12,600	15,120
	South No. 1 split	"						16,500	15,840	17,920
	South No. 2 split	"						21,000	19,200	23,220
								104,750	97,080	113,190

TABLE VI—*Continued.*

NAME OF COLLIERIES	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute	Dimensions or area of furnace grate.	Height of heated columns of air.	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	AMOUNT OF VENTILATION PER MINUTE. At face of workings.	AMOUNT OF VENTILATION PER MINUTE. At outlet or upcast.
No. 1 Shaft Carbondale	Slope No. 1 split	Fan	17	4	90			4	9,460	8,720	9,760
	Slope No. 2 split	"							8,520	7,880	8,780
									17,980	16,600	18,540
Marvine shaft mines	East split	Fan	20	5	80			.6	15,270	14,270	15,630
	Flier's split	"							19,412	18,334	20,525
	Bright's split	"							15,608	14,785	16,300
	No. 1 plane split	"							20,800	21,680	22,660
	No. 2 plane split	"							17,248	16,500	17,412
	No. 3 plane split	"							14,325	11,700	12,600
									102,663	97,269	105,125
Leggett's Creek shaft mines	Gennett heading, north side	Fan	20	5	78			1.03	16,400	16,200	16,400
	East heading, north side	"							18,630	18,420	18,630
	West heading north side	"							22,940	22,750	22,940
	North heading, north side	"							20,000	19,000	20,000
	Marvine heading, north side	"							6,860	6,860	6,860
	Old workings, south side	"							59,400	59,400	59,400
	Diamond vein, north side	"							13,260	13,060	13,260
	Diamond vein, west heading	"							16,695	15,150	16,695
									174,185	170,840	174,185
No. 3 Shaft Carbondale mines	East split	Fan	17	4	109			.4	15,120	3,750	10,920
	West split	"							7,200	2,125	6,720
	Rock heading split	"							9,000	1,600	. . . . .
White Bridge tunnel mines	Split No. 1	"	17	4	110			.4	9,260	8,720	9,480

	Split No. 2.									15,720	15,280	16,000
	Split No. 3.	"								10,260	9,420	10,520
										66,560	40,895	53,640
Powderly slope mines.	South to tunnel split,	Fan.	17	4	64				.5	11,928	10,290	11,928
	North to top coal,	"								18,755	14 548	19,200
	South to Battle's airway.	"								10,400	10,400	10,400
	North to Howard heading.	"								12,900	12,250	14,220
	West to Jay's slope.	"								13,440	11,424	14,226
										67,423	58,912	69,974
Von Storch Diamond Rock and 14' vein.	Rock split,	Fan.	17	4	100				1.75	17,140	14,270	17,820
	Plane side split,	"								16,080	15,100	16,720
	Foot intake 14' split,	"								18,760	17,650	20,870
	North split,	"								20,070	18,200	21,180
										72,050	65,220	76,590
Von Storch Shaft Clark vein.	North side split,	Fan.	20	5	85				1.50	61,555	32,905	41,900
	North split,	"									16,700	21,455
	South side split,	"								31,730	18,635	41,220
	New split,	"									11,100	17,050
										93,280	79,340	121,625
White Oak slope mines.	First lift and split.	Fan.	17	4	64				.4	25,100	14,210	25,785
										25,100	14,210	25,785
White Oak Tunnel No. 5 mines.	North split,	Furnace.					64	60		11,500	10,800	18,900
	Centre split,	"								14,400	5,040	9,505
	South split,	"								19,800	9,600	9,360
										45,700	25,440	37,765
Jermyn No. 3 slope mines.	East side split,	No. 4 fan.	20	5	63				1.5	13,945	12,825	13,840
	West side split,	"								12,475	11,845	12,540
										26,420	24,670	26,380
Jermyn No. 4 shaft mines.	New slope split,	Fan.	20	5	63				1.5	23,000	18,100	23,720
	West gangway split,	"								19,400	17,440	19,820
	North slope, north split.	"								22,240	21,720	22,650
	North slope, west side.	"								17,000	15,200	17,210
	North slope, east split.	"								16,520	15,500	16,710
Jermyn Clark vein.	West of shaft split,	"								21,120	20,900	21,420
	East of shaft split,	"								14,400	14,210	14,700
										133,680	123,070	136,230

TABLE VI—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	DIMENSIONS OF FAN. Width of face in feet.	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Heighth of heated columns of air.	Pressure as shown by water gauge. In inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	At face of workings.	At outlet or upcast.
Green Ridge slope mines.	No. 4 dip slope split.	Fan.	12	4	100				8,500	6,275	8,450
	No. 4 left slope split,	"							8,740	7,480	8,520
	No. 4 right slope split.	"							7,510	6,320	7,450
	No. 2 Siphon split,	"							9,350	7,540	8,575
	No. 3 dip or vein split,	"							11,400	6,725	11,000
	No. 2 vein Powell's road,	"							2,500	2,260	2,400
									48,000	36,600	46,390
Lackawanna Coal Company's mines.	East side split,	Fan.	20	5	50				24,200	15,000	24,260
	East side No. 2 split,	"							23,800	14,440	22,740
	East side water level split,	"							10,000	6,000	11,840
	West side and slope split.	"							29,240	11,560	30,360
									87,240	47,000	89,200
Edgerton drift mines.	Mouth of drift,	3 furnaces combined.				220			19,340	18,150	20,000
	Mouth of drift No. 2,	" "							8,300	7,850	9,000
	Hendrick's drift,	Furnace.				40			16,120	15,800	16,220
	Nendrick's No. 2,	"							6,475	5,920	6,400
	Highland Park drift,	"				40			10,000	7,200	9,875
Simpson slope mines.	Rock slope, east gangway,	Fan.	15	6	70				32,500	21,250	
	Rock slope west gangway,	"								10,510	
	Coal slope, east gangway,	"							30,640	19,560	
	Coal slope at face,	"								10,225	
	At outcast,	"									62,960
									63,140	61,545	62,960

Shaft No. 1, Penn'a Coal Co., top vein.	Southwest side split.	Fan.	17	5	50					19,570	18,501	19,763
Shaft No. 1, Penn'a Coal Co., middle vein.	Southwest side split,	"								15,875	14,876	16,182
										35,445	33,377	35,945
Gypsy Grove, Penn'a Coal Co., Shaft No. 3.	Northeast side split.	Fan.	17½	5	70				.04	13,166	9,860	14,240
Gypsy Grove, Penn'a Coal Co., top vein.	Southwest side split.	"								14,148	11,680	16,284
Gypsy Grove, Penn'a Coal Co., Shaft No. 4.	Southwest side bottom vein.									17,685	14,300	21,500
Gypsy Grove, Penn'a Coal Co., Shaft No. 4.	Northeast side bottom vein.									20,162	15,723	23,133
										65,161	51,503	75,157
Wm. Connell & Co.'s Mines.												
Meadow Brook shaft.	No. 5 lift in slope.	Open fan.									21,920	
	No. 4 lift in slope.	"									14,000	
	West side from shaft.	"	14	3½	120				1.1	76,869	15,168	78,960
	East side counters.	"									22,640	
										76,869	73,728	78,960
Meadow Brook tunnel.	Counter gangway.	Furnace.					6x6—36	60	0.2	42,120	21,420	43,200
	Lower gangway.	"									19,296	
										42,120	40,716	43,200
National shaft and slope.	Slope gangway east.	Open fan.									16,450	
	Slope gangway west.	"	14	3½	120				1.2	67,812	14,160	71,456
	Slope workings.	"									20,592	
	No. 3 vein.	"									10,656	
										67,812	61,858	71,456
Stafford shaft.	No. 2 vein.	Open fan.	9	3	120				0.2	41,960	21,252	44,016
	No. 3 vein.	"									17,856	
										41,960	39,108	44,016
Hillside Coal and Iron Company												
Clifford shaft.	Foot of slope.	Fan.	18	6	70					34,800		
	North split.	"								25,935	9,718	17,850
	South split.	"								14,437	6,930	20,735
	Foot of shaft.	"								40,000		86,400
	West split.	"								24,200	8,820	14,768
										139,372	25,468	139,753

TABLE VI—*Continued.*

NAME OF COLLERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	With of face in feet.	Revolutions of fan per minute.	Dimensions of area of furnace grate.	Height of heated columns of air.	Pressure as shown in water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake.	At face of workings.	At outlet or upcast.
Erie shaft	Bengough heading	Fan	17½	4	67			1.1	19,224	18,624	20,952
	Gilhooly heading	"							18,864	18,240	19,944
	Lyons heading	"							18,400	13,860	21,840
	Walkers heading	"							19,380	13,600	21,600
									75,868	64,324	84,336
Forest City slope	North split	Fan	11	4	120			0.5	13,800	10,500	19,500
	South split	"							12,000	12,720	14,400
									25,800	23,220	33,900
Forest City shaft No. 2	No. 1 split	Fan	18	6	100			0.65	17,568	12,276	16,170
	No. 3 split	"							22,504	18,288	31,900
	No. 4 split	"							29,520	19,188	16,000
	No. 5 split	"							15,756	14,168	23,364
	No. 2 split	"							15,840	17,160	10,780
									101,188	81,080	98,214
Glenwood shaft No. 2	North heading	Fan	18	6	80			0.4	23,100	14,400	16,800
	South heading	"							19,200	15,840	23,100
	East heading	"							26,880	26,520	31,584
	West heading	"							45,760	40,320	44,660
									114,940	97,080	116,144
Keystone tunnel	Second opening	Furnace				80			35,100	33,480	30,000
	Rock plane shaft	"							20,000	19,280	26,400
									55,100	52,760	56,400

Pennsylvania Coal Co. Mines.											
Shaft No. 5.	1st vein, northeast side.	Fan.	17½	50	85			0.04	4,500	2,000	
	1st vein, southwest side.	"							5,000	2,500	9,500
	2d vein, northeast side.	"							23,000	18,200	
	2d vein, southwest side.	"							26,300	20,100	49,760
	3d vein, southwest side.	"							15,240	10,160	30,540
	3d vein, northeast side.	"							14,200	9,300	
	4th vein, southwest side.	"							12,520	7,600	12,800
									100,760	69,860	102,600
Lackawanna Coal and Iron Company.											
Capouse shaft mine.	A, Big or G vein, No. 1 split.	Fan.	18	5	60			0.7	30,000	27,000	29,000
	A, Big or G vein, No. 1 split.	"	20	5	80			0.9	33,500	32,000	35,000
	Clark vein.	"							29,000	27,000	30,000
	H Diamond vein.	"							31,000	30,000	34,000
	J Diamond vein.	"							32,000	31,000	34,000
	K Diamond vein.	"							31,000	30,000	33,000
	L Rock vein.	"							29,000	28,000	35,000
									215,500	205,000	230,000
Pine Brook shaft.	Gangway A, 3d vein.	Fans (two).	17½	4	98			1.2	40,217	37,462	43,571
	Gangway B, 3d vein.	Fan.	20	6	75			1.2	30,954	28,382	32,760
	Gangway C, 3d vein.	"							26,324	24,326	27,841
	Gangway D, Clark vein.	"							33,240	32,460	34,756
	Gangway E, Clark vein.	"							29,400	27,874	30,943
	Gangway F, Clark vein.	"							41,826	39,216	43,704
	Gangway G, Clark vein.	"							24,237	23,572	25,200
									226,198	213,192	238,775
Church slope mines.	East split.	Natural.							45,800	22,300	
	West split.	"								21,250	
									45,800	33,550	
Dolph drift mines.	Mouth of drift, No. 1 split.	Fan.	15	4	80				49,000	12,000	11,500
	No. 2 split.	"								18,900	20,200
	No. 3 split.	"								19,200	19,600
									49,000	40,100	51,300
Elk Creek drift mines.	New drift.	Small fan.							13,500	11,700	24,300
Jones, Simpson & Co.'s mines.	Shaft Pender split.	Fan.	15	3⅝	70				87,000	40,450	
	Shaft Ganghaus split.	"	15							45,550	87,300
									87,000	86,000	87,300
Jones, Simpson & Co.'s drift mines.	Slope split.	Fan.	12	3⅝	70				85,580	18,480	
	Plane split.	"								23,210	89,100
									85,580	41,690	89,100

TABLE VI *Continued.*

NAME OF COLLERIES.	Local name, number or letter of each split of air.	Mode of ventilation.	DIMENSIONS OF FAN. Diameter in feet.	Width of face in feet.	Revolutions of fan per minute.	Dimensions or area of furnace grate.	Height of heated column of air	Pressure as shown by water gauge, in inches.	AMOUNT OF VENTILATION PER MINUTE. At intake	At face of workings	At outlet or upcast
Murray's mines, Dunmore	One air current	Natural							18,200	13,000	19,500
Mount Pleasant slope mines	East side, Clark vein	Fan	14	4	112	Idle			31,025	23,800	32,500
	West side, Clark vein	"	20	6	60			0.8	25,840	16,120	2,350
	Jones split, Clark vein	"							24,600	23,200	25,000
	Big vein split	"							32,500	9,625	32,160
									111,965	72,745	113,160
Mount Jessup slope mines	Powells heading	Fan	14	5	75				17,150	12,750	
	Pilgers heading	"							16,930	11,970	
	Rough tract plane	"							21,580	16,150	63,000
									55,660	40,870	63,000
Marshwood slope and tunnel mines	West gangway	Fan	14	4	80				59,850	27,225	
	East gangway	"								23,040	60,500
									59,850	50,265	60,500
Ontario shaft mines	Northeast split	Fan	12	4	70				42,800	19,850	
	Southwest split	"							25,000	16,200	67,950
									67,800	36,050	67,950
Providence shaft mines	West side of shaft	Fan	10	33	124				21,280	7,560	38,950
	East side of shaft	"							22,270	2,220	
	Drift split	"							5,560	1,570	1,890
									49,110	11,350	45,840

Pierce slope and tunnel mines.	No. 4 drift, head of slope.	Fan.	12	4	70			39,000	11,000	80,000
	Drift No. 2 split.	"							21,000	
	Old workings in tunnel.	"								30,000
										110,000
Pancoast shaft mines.	Water level split.	Fan.	20	5	65			20,800	19,600	22,300
	Youngs heading split.	"						18,290	17,800	19,610
	Hammonds heading split.	"						19,200	18,300	21,400
	Slope No. 1, top vein.	"						9,100	8,900	10,080
	Slope No. 2, top vein.	"						13,770	10,360	14,100
								81,160	74,960	87,490
Rush Brook shaft and tunnel mines.	Shaft, west split.	Fan.	15	4	55			25,640	12,000	
	Shaft, east split.	"							10,240	26,210
								25,640	22,240	26,210
Rush Brook tunnel mines.	Tunnel.	Furnace.				6x6		28,500	20,140	29,160
Spencer shaft mines.	Middle vein, southeast side.	Fan.	14	5	120			8,100	8,080	8,220
	Middle vein, northeast side.	"						10,580	10,400	10,760
	Slope, southeast side.	"						14,640	14,500	14,880
	Slope, northeast side.	"						14,860	14,700	15,000
								48,180	47,680	48,860
[a]S. V. White tunnel mine.	Lower heading split.	Furnaces (two).				8x8 and 6x6		10,350	6,740	
	South heading split.	"						10,140	8,260	
	North heading split.	"						11,480	10,240	32,640
								31,970	25,240	32,640

There are 76 mines ventilated by fans, 12 by furnaces and 3 coal-sale mines by natural means.

TABLE VI—*Continued.*

NAME OF COLLIERIES.	Local name, number or lettter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Del., Lack. and Western R. R. Co.												
Archbald shaft	John Wrist				Good				8	2	140	
	Thomas Butler				"				38	8		
	Wm. P. Jones				"				46	5		
	Rees Williams				"				72	8		
	James Stevens				"				36	5		
	Rock vein				"				43	8		110
									243	36	140	110
Bellevue shaft	A and I				Good				49	8	180	
	B and C				"				50	8		
	J and M				"				70	9		
	S and S				"				44	8		
	N and V				"				2			100
									215	33	180	100
Bellevue slope	I, H, F				Good				24	3	98	
	G and E				"				54	9		
	K and L				"				17	4		100
									95	16	98	100
Brisbin shaft	John Watkins, Clark vein				Good				49	6	140	
	Wm. C. Davis, Clark vein				"				28	3		
	Benjamin Williams, Clark vein				"				39	4		
	Michael Kelley, Clark vein				"				36	4		
	James H. Davis, Clark vein				"				14	2		
	John Watkins, G vein				"				33	3		
	James Roberts, G vein				"				34	7		90
									233	29	140	90

4 Mines.

Continental shaft.	Wm. J. Hughes.	Good.				210		
	Christ. Jones.	"		50	7			
	Wm. E. Rees.	"		52	9			
	Pat. Hogan.	"		38	5			
	Pat. Cannon.	"		16	3			
	John Evans.	"		62	9			
	Hyde Park.	"		4	1			
	New County.	"		24	3			132
				246	37	210		132
Central shaft.*	Moyle's gangway.	Good.		52	10	140		
	Clark vein.	"		25	2			
	A. B and E.	"		34	5			
	S and W.	"		18	3			
	West Side.	"				90		105
	Locomotive road.	"		3				
	X and F.	"		19	3			
	P. T and R.	"		35	6			
	Rock vein.	"		54	7			
	C.	"		25	3			70
	Hampton road.	"						
				265	39	230		175
Cayuga shaft.	John Stanton.	Good.		42	6	140		
	George Burtch.	"		68	10			
	Patrick McGuire.	"		68	8			
	Clark vein.	"		32	2			95
				210	26	140		95
Dodge shaft.	B.	Good.				140		
	G and K.	"		65	9			
	E and H.	"		46	5			
	F.	"		30	6			
	A.	"		37	7			
	C.	"		28	7			
	S.	"		29	12			132
				235	46	140		132
Diamond No. 2 shaft.	No. 1 split.	Good.		29	4	120		
	No. 2 split.	"		23	4			120
				52	8	120		120
Holden shaft.	L. New County.	Good.	.6			140		
	E. New County.	"		45	8			
	Barn.	"						
	Old workings.	"						
	A. rock vein.	"		40	5			
	C. Clark vein.	"		75	17			

* Breaker burned August 18, 1890.

TABLE VI—*Continued.*

NAME OF COLLIERIES	Local name, number or letter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Holden shaft	D. Clark vein				Good				35	5		100
	Barn vein				"							
									195	35	140	100
Hyde Park shaft	R. T. Edwards' gangway				Good				50	11	210	
	Clark vein				"				44	4		
	New County vein				"				43	5		
	H. Thomas, Diamond vein				"				68	14		120
									205	34	210	120
Hampton shaft	Rock vein, west				Good				38	6	117	
	Wm. Richards				"				36	7		
	Isaac Griffith's				"				57	11		
	Thomas T. Richards				"				75	13		
	Wm. H. Reese				"				37	17		120
									243	54	117	120
Manville shaft	No. 1 Fan, Clark vein				Good						120	
	No. 1 Fan, Bottom vein				"				43	3		70
	Peter Hartman				"				19	4	140	
	Peter Compters				"				26	3		
	Enoch Day				"				19	3		
	Wm. Harvey				"				28	4		80
									135	14	260	150

Oxford shaft,	Dyer's road,				Good,				38	6	140		
	"A" and "E."				"				48	8			
	"C,"				"				26	7			
	"D,"				"				17	4			
	"B" and "C," Big vein,				"				30	3			
	"E,"				"				4	2			
	"D,"				"				65	6			
	"A,"				"				6	1			132
									234	37	140		132
Pyne shaft,	"R" and "E" gangway,				Good,				37	3	140		
	"W" and "J,"				"				28	3			
	"J" and "D,"				"				45	7			
	"W" and "R,"				"				29	5			
	"J" and "H,"				"				22	2			
	"W" "D" and "N" "C,"				"				71	12			
									232	32	140		100
Sloan shaft,	"K,"				Good,				37	8	150		
	"B,"				"				70	11			
	"C,"				"				14	2			
	"E,"				"				60	12			
	"H,"				"				51	10			
	"L,"				"				30	6			
	"J,"				"				54	9			
	"R," "S" and old works,				"								100
									316	58	150		100
Stoors shaft,	"A" split,				Good,				41	3	220		
	"B,"				"				75	22			
	"C,"				"				55	4			
	"D,"				"				25	2			150
	East second opening,				"				62	5	220		
	West second opening,				"				12	1			150
	Drift opening,				"				26	4			
									296	41	440		300
Tripp, Diamond shaft,	Robinson's split,				Good,				41	7	140		
	Brisbin split,				"				26	4			
	Grogans split,				"				58	7			
	Barn split,				"								
	Reese split,				"				58	4			120
	Phillips' split,				"				57	6	100		120
									240	28	240		240

TABLE VI.—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Taylor shaft.	"S" split, ...	. . . . .	. . . . .	. . . . .	Good,	. . . .	. . . .	. . . .	47	6	240	. . . . .
	"B" split, ...	. . . . .	. . . . .	. . . . .	"	. . . .	. . . .	. . . .	67	8	106	. . . . .
	"J" split.	. . . . .	. . . . .	. . . . .	"	. . . .	. . . .	. . . .	42	7	. . . . .	. . . . .
	"R" split, ...	. . . . .	. . . . .	. . . . .	"	. . . .	. . . .	. . . .	71	9	. . . . .	54
	Lower vein split, ...	. . . . .	. . . . .	. . . . .		. . . .	. . . .	. . . .	. . . .	. . . .	. . . . .	92
									227	30	346	146
Taylor drift.	Intake.	. . . . .	. . . . .	. . . . .	Good,	. . . .	. . . .	. . . .	. . . .	. . . .	60	. . . . .
	M split.	. . . . .	. . . . .	. . . . .	"	. . . .	. . . .	. . . .	61	12	. . . . .	54
									61	12	60	54
Delaware and Hudson Canal Co. Clinton slope and drift mines. . . .	South split.	11x6	11x6	8x6	Good,	190	181	263	36	5	14x7	. . . . .
	North split.	11x6	11x6	10x6	"	332	324	382	63	4	. . . . .	. . . . .
	Water level split.	11x5½	11x5½	12x6	"	211	210	191	49	3	. . . . .	14x6
									148	12	98	84
Coal Brook tunnel mines.	South intake No. 1.	48	48	48	Good,	195	170	200	42	6	184	. . . . .
	West intake No. 2, ...	50	42	42	"	180	185	235	58	7	. . . . .	. . . . .
	East intake No. 3, ...	50	50	50	"	190	180	195	58	7	. . . . .	. . . . .
Lackawanna tunnel mines, ...	North intake No 4.	36	40	40	"	200	185	180	17	2	. . . . .	100
Wilson Creek tunnel mines.	Phillip's heading.	75	55	50	"	290	250	500	58	9	130	. . . . .
	Emmett's heading.	29	91	65	"	450	130	190	33	2	. . . . .	. . . . .

	Smith's heading,	57	66	40	"	240	200	345	61	8		
	Water Level heading,*	75	50	55	"	400	455	465	75	9		83
									412	54	314	183
Dickson shaft mines,	East side No. 1 split,	105		144	Good,	528		919			10x26	
	West side No. 2 split,	120			"	624					10x12	7x10
	Plane Heading No. 3,		105	104	"		157	161	64	7		
	Loftus heading No. 4,		78	80	"		183	188	28	2		
	Golden's heading No. 5,		98	93	"		167	177	18	4		
	Flynn's dip No. 6,		120	124	"		325	311	62	7		
	Slope E No. 7,		112	100	"		146	165	34	4		
	Slope W No. 8,		113	118	"		233	228	58	8		
									264	32	380	70
Eddy Creek shaft mines,	Murphy's heading, No. 1,	50	56	70	Good,	409	325	310	65	8	10x14	
	"E" No. 2,	50	54	50	"	244	195	265	65	8		
	North No. 3,	50	50	50	"	365	300	387	60	6		
	West No. 4,†	23	25	25	"	295	240	280	20	1		10x10
									210	23	140	100
Olyphant No. 2 shaft mines,‡	South No. 1,	50	50	25	Good,	285	294	625	55	9		
	South No. 2,§	25	30	25	"	565	462	599	66	8		10x10
									121	17		100
Grassy Island shaft,	North heading split,	4x10=40	6x10=60	6x11=66	Good,	600	333	365	75	6		
	South Plane split,	6x10=60	6x10=60	6x12=72	"	235	367	337	75	7		
	Slope No. 1 split,	6x10=60	6x12=72	8x10=80	"	271	195	205	65	4		
	Slope No. 2 split,	7x10=70	7x10=70	12x8=96	"	286	270	222	70	5		
									285	22		
Jermyn No. 1 shaft,	Rock plane east,	25	20	18	Good,	390	470	545	29	2		
	Rock plane west,	30	40	48	"	420	485	280	54	3		
	Slope No. 1 split,	48	36	42	"	350	410	440	52	4		
	Slope No. 2 split,	40	32	54	"	365	465	300	49	3		
	Slope No. 3 split,	60	45	24	"	225	280	630	42	2		
	South No. 1 split,	66	48	32	"	250	330	560	44	4		
	South No. 2 split,	60	40	54	"	350	480	430	56	7		
									326	25		
No. 1 Shaft Carbondale,	Slope No. 1 split,	5x8=40	4x8=32	7x6=42	Good,	237	273	232	47	7	56	
	Slope No. 2 split,	6x6=36	4x7=28	5½x7=38½	"	237	282	229	36	4		48
									83	11	56	48

* Midland tunnel, 12 men and 2 mules working at drawing back pillars.
† 28 men and 2 mules working at night.
‡ Intake at Eddy Creek shaft.
§ 12 men and 1 mule working by night.
‖ 4 men and 1 mule working at night.

TABLE VI—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Del. and Hudson Canal Co.'s mines.												
Marvine shaft mines,	East split,	101	101	45	Good,	152	143	347	43	7	210	
	Filer's split,	91	81	66	"	213	226	311	48	5		
	Bright's split,	112	95	48	"	139	156	340	43	6		
	No. 1 plane split,	90	84	103	"	231	258	220	70	7		
	No. 2 plane split,	77	70	80	"	224	236	218	58	6		
	No. 3 plane split,	63	45	120	"	229	260	105	45	6		100
									307	37	210	100
Leggett's Creek shaft mines,	Gennett's heading, north side,	4x10=40	4½x10=45	4x10=40	Good,	410	360	410	33	8	10x24=240	
	East heading, north side,	5½x10½ 54	5x10=50	5½x10½=54	"	345	368	345	36	7		
	West heading, north side,	36	55	36	"	637	414	637	46	6		
	North heading, north side,	40	50	40	"	500	380	500	32	9		
	Marvine heading, north side,	48	41	41⅛	"	143	167	1,429	4			
	Old workings, south side,	66⅛	66⅛	66⅛	"	892	892	892				
	Diamond vein, north side,	52½	40	52½	"	251	326	251	30	5		
	Diamond vein, west heading,	63	30½	63		265	500	265	16	4		10x10=100
									197	39	240	100
No. 3 Shaft Carbondale,	East split,	42	30	42	Good,	360	125	260	58	7	7x6=42	
	West split,	30	25	48	"	240	71	140	28	2		
	Rock heading split,*	25	20		"	360	80		18	2		7x10=70
White Bridge tunnel mines,	Split No. 1,	30	25	40	"	309	349	237	18	4	6x9=54	
	Split No. 2,	48	30	42	"	328	509	381	72	10		
	Split No. 3,	38½	24	48	"	266	392	220	48	7		10x8=80
									242	32	96	150

*Old workings

Powderly slope mines.	South to tunnel split.	42	42	42	Good.	284	245	284	22	4	48	. . . . .
	North to top coal.	55	42	60	"	341	244	320	33	6	78	. . . . .
	South to Battle's airway. . . .	50	50	50	"	208	208	208	12	2	. . . . .	. . . . .
	North to Howard heading. . .	50	50	50	"	258	245	237	41	6	. . . . .	67
	West to Jay's slope,*	60	42	60	"	224	272	237	46	5	. . . . .	67
									154	23	126	134
Von Storch Diamond Rock and 14' veins.	Rock split.	72	60	60	Good.	238	238	297	50	7	98	. . . . .
	Plane side split.	40	70	72	"	402	216	232	28	8	40	. . . . .
	Foot intake 14' split.	42	108	50	"	447	163	417	41	6	. . . . .	. . . . .
	North split.	50	90	52½	"	401	202	403	50	8	. . . . .	144
									169	29	138	144
Von Storch Shaft Clark Vein. . . .	North side split.	121	55	65	Good.	509	598	645	68	11	150	. . . . .
	North split.	60	60	65	"	. . .	278	330	45	6	. . . . .	. . . . .
	South side split.	70	65	78	"	453	286	528	60	9	. . . . .	. . . . .
	New split.	60	60	55	"	. . . .	185	310	49	6	. . . . .	60
									222	32	150	60
White Oak slope mines.	First lift and split.	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	33	4	76	76
									33	4	76	76
White Oak Tunnel No. 5 mines. . .	North split.	24	24	36	Good.	480	450	525	79	5	48	. . . . .
	Centre split.	36	84	28	"	400	60	315	79	8	48	. . . . .
	South split.	36	24	104	"	550	400	90	79	3	36	72
									237	16	132	72
Jermyn No. 3 slope mines.	East side split.	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	50	7	187	. . . . .
	West side split.†	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	48	8	. . . . .	80
									98	15	187	80
Jermyn No. 4 shaft mines.	New slope split	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	19	5	260	. . . . .
	West gangway split.	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	34	5	. . . . .	. . . . .
	North slope, north split. . . .	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	34	11	. . . . .	. . . . .
	North slope, west split. . . .	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	20	4	. . . . .	. . . . .
	North slope, east split. . . .	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	27	5	. . . . .	. . . . .
Jermyn Clark Vein shaft mines. . .	West of shaft split.	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	38	4	. . . . .	. . . . .
	East of shaft split.	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	1	1	. . . . .	100
									173	35	260	100
Green Ridge slope mines.	No. 4 dip slope split.	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	34	3	98	. . . . .
	No. 4 left slope split.	. . . . .	. . . . .	. . . . .	"	. . . . .	. . . . .	. . . . .	42	6	. . . . .	. . . . .

* Slope. † Outcast at No. 4 shaft.

TABLE VI—*Continued.*

NAME OF COLLIERIES.	Local name, number or letter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Green Ridge slope mines.	No. 4 right slope split.	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	15	2	. . . . .	. . . . .
	No. 2 Siphon split.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	33	5	. . . . .	. . . . .
	No. 3 dip or vein split.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	14	2	. . . . .	. . . . .
	No. 2 Vein Powell's road. . . .	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	11	1	. . . . .	90
									149	19	98	90
Lackawanna Coal Company's mines*	East side split.	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	70	10	250	. . . . .
	East side No. 2 split.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	68	9	. . . . .	. . . . .
	East side water level. † . . .	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	16	8	. . . . .	. . . . .
	West side and slope split. ‡ . .	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	75	23	. . . . .	100
									276	49	250	100
Edgerton drift mines.	Mouth of drift.	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	62	9	84	100
	Mouth of drift No. 2.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	29	4	. . . . .	. . . . .
	Hendrick's drift.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	51	3	84	60
	Hendrick's No. 2.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	30	2	. . . . .	. . . . .
	Highland Park drift.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	27	3	84	72
Simpson slope mines.	Rock slope, east gangway. . .	. . . . .	. . . . .	. . . . .	Good.	. . . . .	. . . . .	. . . . .	70	11	78	. . . . .
	Rock slope, west gangway. . .	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	47	6	. . . . .	. . . . .
	Coal slope, east gangway. . . .	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	68	7	. . . . .	. . . . .
	Coal slope at face.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	57	7	. . . . .	100
	At outcast.	. . . . .	. . . . .	. . . . .	..	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .	. . . . .
									242	31	78	100

* 24 persons working by night. † 6 persons working by night. ‡ 17 persons working by night

Shaft No. 1 Penn'a Coal Co., top vein.*	Southwest side split.				Good,				79	7	144	
Shaft No. 1 Penn'a Coal Co., middle vein.*	Southwest side split.				"				46	5		96
									125	12	144	96
Gypsy Grove, Penn'a Coal Co., Shaft No. 3.	Northeast side split.				Good,				43	5	111	
Gypsy Grove, Penn'a Coal Co., top vein.	Southwest side split.				"				56	4		
Gypsy Grove, Penn'a Coal Co., Shaft No. 4.	Southwest side bottom vein,				"				72	9		
Gypsy Grove, Penn'a Coal Co., Shaft No. 4.	Northeast side bottom vein.				"				73	8		48
									244	26	111	48
Wm. Connell & Co.'s Mines.												
Meadow Brook shaft.	No. 5 lift in slope,	13x9	5x16	5x14	Good,	657	274	1,128	60	8	13x9	4½x12
	No. 4 lift in slope,		5x16				175		46	6		
	West side from shaft,		6x16				158		54	6		
	East side counters.		5x16				283		72	8		
									232	28		
Meadow Brook tunnel.	Counter gangway,	6x12	7x12	6x6	Good,	585	255	1,200	40	8	6x12	6x6
	Lower gangway,		6x12				268		46	8		
									86	16		
National shaft and slope,	Slope gangway east.	11x18	5x14	11x8	Good,	344	235	812	32	4	6½x18	11x18
	Slope gangway west.		12x5				236		27	3		
	Slope workings.		12x6				286		41	4		
	No. 3 vein.		12x6				148		17	2		
									117	13		
Stafford shaft.	No. 2 vein.	7½x6	7x12	4x12	Good,	928	253	917	14	1	7½x6	4x12
	No. 3 vein.		6x12				248		15	1		
									34	2		
									63	4		
Hillside Coal and Iron Company.											11x16	
Clifford shaft.	Foot of slope.	8x15		9½x5½	Good,	290					8x15	154
	North split.	8¾x3	9½x6½		"	420	186	680	19	1		
	South split.	10½x5½	10½x6	6½x11	"	250	110	290	58	3		
	Foot of shaft.				"	400		1,200				
	West split.	5½x11	10½x6	4x13		400	140	284	60	4		
									137	8	296	154

* Nine persons working by night.

TABLE VI—*Continued.*

NAME OF COLLERIES.	Local name, number or letter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Erie shaft	Bengough heading	6x12	6x16	6x12	Good,	267	194	291	75	9	7x13 10x16	10x10
	Gilhooly heading	6x12	6x10	6x12	"	262	304	277	75	8	. . . . .	. . . . .
	Lyons	6½x6	7x11	6x10	"	460	180	364	65	7	. . . . .	. . . . .
	Walkers	6x8½	7x11½	6x6	"	380	170	600	65	7	. . . . .	. . . . .
									280	31	251	100
Forest City slope	North split	6x10	6x10	5x13	Good,	230	210	300	58	6	5x16 6x11	10x10
	South split	6x10	5x10	6x12	"	200	212	200	21	3	. . . . .	. . . . .
									79	9	146	100
Forest City shaft No. 2	No. 1 split	4x18	6x11	5x11	Good,	244	186	294	34	7	7x10 6x16	11x14
	No. 3 split	6' 5"x15	6x12	5x23	"	232	254	280	68	10	. . . . .	. . . . .
	No. 4 split	6x12	6x13	4x20	"	410	246	200	17	2	. . . . .	. . . . .
	No. 5 split	6x13	7x11	6x11	"	202	184	354	18	2	. . . . .	. . . . .
	No. 2 split	8x11	6x11	7x14	"	180	260	110	59	7	. . . . .	. . . . .
									196	28	156	154
Glenwood shaft No. 2	North heading	7x11	5x12	6x8	Good,	300	240	350	73	5	12x17	12x13
	South heading	6x8	6x12	6x7	"	400	220	550	74	5	. . . . .	. . . . .
	East heading	6x8	6x13	7x8	"	560	340	564	73	4	. . . . .	. . . . .
	West heading	6' 5"x16	6x14	7x11	"	440	480	580	72	6	. . . . .	. . . . .
									222	20	204	156

Keystone tunnel	Second opening	6′ 5″x9	5x8	6x10	Good	600	837	500	75	8	5′ 5″x12	10x10
	Rock plane shaft	4x10	5x8	5′ 5″x12	"	500	482	400	70	7	4x10	
									145	15	106	100
Pennsylvania Coal Co. Mines.												
Shaft No. 5	1st vein, northeast side				Good				6	1	60	
	1st vein, southwest				"				9	2		
	2d vein, northeast side. *				"				75	8		
	2d vein, southwest side, †				"				75	9		
	3d vein, southwest side				"				39	5		
	3d vein, northeast side				"				44	6		
	4th vein southwest side				"							120
									274	31	60	120
Lackawanna Iron and Coal Co.												
Capouse shaft mines	A, Big or G vein, No. 1 split				Good				52	9	80	140
	A, Big or G vein, No. 1 split				"				45	8	90	140
	Clark vein				"				29	4		
	H, Diamond vein				"				50	8		
	J, Diamond vein				"				17	2		
	K, Diamond vein				"				64	15		
	L, Rock vein				"				52	10		
									309	56	170	280
Pine Brook shaft	Gangway A, 3d vein				Good				67	12	140	196
	Gangway B, 3d vein, ‡				"				84	15	140	196
	Gangway C, 3d vein				"				40	5		
	Gangway D, Clark vein				"				66	10		
	Gangway E, Clark vein				"				62	10		
	Gangway F, Clark vein				"				66	10		
	Gangway G, Clark vein				"				38	5		
									423	67	280	392
Church slope mines	East split, §				Good				12	3		
	West split				"				13	3		
									25	6		
Dolph drift mines	Mouth of drift, No. 1 split, ‖				Good				30	5		12x14
	No. 2 split				"				45	4		
	No. 3 split				"				59	7		
									134	16		168
Elk Creek drift mines	New drift				Good				18	4	48	42

*Sixteen persons working on the night shift. †Ten persons working on the night shift. ‡Fourteen persons and five mules working at night.
§Outlet in Del., Lack. & West. R. R. Co. mines. ‖Have three openings for intake.

TABLE VI - *Continued.*

NAME OF COLLERIES.	Local name, number or letter of each split of air.	Dimensions of place where air was measured at intake, in feet.	Dimensions of place where air was measured at face of workings, in feet.	Dimensions of place where air was measured at outcast.	Condition of ventilation.	Velocity of air at intake, in feet, per minute.	Velocity of air at face of workings, in feet, per minute.	Velocity of air at outcast, in feet, per minute.	Number of persons working in each split.	Number of horses and mules in each split.	Dimensions of intake in feet.	Dimensions of outcast in feet.
Jones, Simpson & Co.'s mines.	Shaft, Pender split.				Good.				75	7	14x6	
	Shaft, Ganghaus split.				"				75	7		13x5½
									150	14	84	71½
Jones, Simpson & Co.'s drift mines.	Slope split.*				Good.				81	7	140	
	Plane split.				"				74	6		100
									155	13	140	100
Marray's mines, Dunmore.	One air current.†				Good.				14	5		
Mount Pleasant slope mines.	East side, Clark vein.				Good.				75	8	72	
	West side, Clark vein.‡				"				83	10	140	
	Jones split, Clark vein.				"				70	7		130
	Big Vein split.§								77	8		130
									305	33	212	260
Mount Jessup slope mines.	Powels heading.				Good.				25	5	70	
	Pilgers heading.				"				27	4		
	Rough Tract plane.				"				31	5		64
									83	14	70	64
Marshwood slope and tunnel mines.	West gangway.				Good.				65	18	63	
	East gangway.				"				52	8		88
									117	26	63	88

Ontario shaft mines.	Northeast split.					Good.				73	3	330	
	Southwest split.					"				23	1		72
										96	4	330	72
Providence shaft mines.	West side of shaft.					Fair.				62	9	125	
	East side of shaft.					"				30	5		
	Drift split.					"				35	6		73
										127	21	125	73
Pierce slope and tunnel mines.	No. 4 drift, head of slope.					Good.				50	4	100	
	Drift, No. 2 split.					"				64	7		
	Old workings in tunnel.					"				100	9		144
											20	100	144
Pancoast shaft mines.	Water Level split.					Good.				61	13	200	
	Youngs heading split.					"				40	7		
	Hammonds heading split.					"				55	7		
	Slope No. 1, top vein.					"				52	5		
	Slope No. 2, top vein.					"				56	5		120
										264	37	200	120
Rush Brook shaft and tunnel mines.	Shaft, west split.¶					Good.				60	2	154	133
	Shaft, east split.					"				61	2		
										121	4	154	133
Rush Brook tunnel mines.	Tunnel.					Good.				75	3	50	48
Spencer shaft mines.	Middle vein, southeast side.					Good.				40	4	200	
	Middle vein, northeast side.					"				52	7		
	Slope, southeast side.					"				70	8		
	Slope, northeast side.					"				72	9		96
										234	28	200	96
S. V. White tunnel mine.	Lower heading split.					Good.				42	5	84	
	South heading split.					"				14	1		
	North heading split.					"				49	5		100
										105	11	84	100

*Nine persons working on night shift.
†Ventilated on one side by Pennsylvania Coal Co. and the other by Spencers mines.
‡Ten persons are working at night.
§Two men are working on night shift.
In old workings there are several holes broken through to surface.
¶Shaft workings commenced operating in December.

SECOND ANTHRACITE DISTRICT.

(LUZERNE, LACKAWANNA AND SULLIVAN COUNTIES.)

OFFICE OF INSPECTOR OF MINES,
PITTSTON, PA., *April 27, 1891.*

HON. THOMAS J. STEWART,

Secretary of Internal Affairs:

SIR: I have the honor herewith of presenting my sixth annual report as Inspector of coal mines for the Second district of the anthracite coal field for the year ending December 31, 1890.

The number of fatal accidents was forty (40); leaving twenty-four (24) widows and seventy-seven (77) orphans; being twelve fatal accidents two widows less and thirteen orphan children more than for the year 1889.

The number of serious non-fatal accidents was one hundred and seventy-four (174); being eight less than for the year 1889.

The report contains the usual tables, also the petition for the readjusting of the boundary line between districts Nos. 1 and 2, with a report of No. 14 shaft fire and other valuable information.

Yours very respectfully,
H. McDONALD,
Inspector of Mines

TOTAL QUANTITY OF COAL MINED DURING THE YEAR 1890.

Pennsylvania Coal Company,	1,084,100.00
Lehigh Valley Coal Company,	608,183.11
Delaware and Hudson Canal Company,	567,759.01
Delaware, Lackawanna and Western Railroad Company,	179,082.01
Butler Coal Company,	178,172.00
Newton Coal Company,	189,114.19
Wyoming Valley Coal Company,	183,323.04
Miscellaneous coal companies,	2,239,292.07
Total,	5,229,027.03

The total production of coal in this district during this year was 5,229,027.03 tons, an increase of 562,136 tons over the production of 1889.

EXAMINATION OF APPLICANTS FOR THE POSITION OF MINE FOREMAN.

The annual examination of applicants for certificates of qualification for mine foremen was held in this district, at Pittston, Pa., on July 8 and 9, 1890.

The board of examiners was H. McDonald, Inspector of mines, Thos. Waddell, coal operator, and Patrick Sweeney, miner.

The following persons having passed a satisfactory examination were recommended to have certificates given them qualifying them for the position of mine foreman under the mine law:

Michael Gibbons,	Pittston.
John F. Hefferen,	Pittston.
Roger A. Hines,	Pittston.
Thomas Mooney,	Pittston.
Patrick Maloney,	Pittston.
J. J. Hanlan,	Avoca.
Solomon Deeble,	Avoca.
Charles A. Merrick,	Avoca.
William Johnson,	Bernice.
John Wallace,	Luzerne borough.
Michael Durken,	Miners Mills.
Edward Lynn,	Port Blanchard.
Frank Barrett,	Port Blanchard.
William T. Lacy,	Hudson.
William Morgan,	Parsons.
John Jopling,	Inkerman.
Christopher Rahbine,	Moosic.

Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Name of Operators.	Number of lives lost.	Tons of coal mined per life lost.
Pennsylvania Coal Company,	4	281,025
Lehigh Valley Coal Company,	6	101,363
Delaware and Hudson Canal Company,	1	567,759
Delaware, Lackawanna and Western Railroad Company,	1	179,082
Butler Coal Company,	1	178,172
Newton Coal Company,	1	189,114
Wyoming Valley Coal Company,	.	No life lost.
Miscellaneous coal companies,	26	85,765
Total,	40	125,907

Number of Non-Fatal Accidents and Tons of Coal Produced per Person Injured.

Name of the Operators.	Number of persons injured.	Tons of coal produced per persons injured.
Pennsylvania Coal Company,	28	38,718
Lehigh Valley Coal Company,	21	28,961
Delaware and Hudson Canal Company,	7	81,108
Delaware, Lackawanna and Western Railroad Company,	13	13,775
Butler Coal Company,	9	19,797
Newton Coal Company,	10	18,911
Wyoming Valley Coal Company,	10	18,332
Miscellaneous coal companies,	76	29,340
Total,	174	29,997

Number of Serious and Fatal Injuries and Tons of Coal Produced per each Person Injured or Killed.

Name of the Operators.	Number injured or killed.	Tons of coal produced per person injured or killed.
Pennsylvania Coal Company,	32	33,878
Lehigh Valley Coal Company,	27	22,525
Delaware and Hudson Canal Company,	8	70,969
Delaware, Lackawanna and Western Railroad Company,	14	12,791
Butler Coal Company,	10	17,817
Newton Coal Company,	11	17,192
Wyoming Valley Coal Company,	10	18,332
Miscellaneous coal companies,	102	21,861
Total,	214	24,390

5 Mines.

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

CAUSES OF INJURIES.	Killed or fatally injured.	Seriously injured.
By explosions of carbureted hydrogen gas,	1	43
By falls of roof and coal,	23	49
Crushed and run over by mine cars,	7	36
By explosions of powder and blasts,	2	17
By falling down shafts,	2	
Miscellaneous causes inside,	2	21
Miscellaneous causes outside,	3	8
Total,	40	174

OCCUPATION OF PERSONS KILLED OR INJURED.

	Killed.	Injured.
Miners,	20	65
Miners' laborers,	8	42
Drivers and runners,	4	24
Door boys and slate pickers,	2	11
Miscellaneous inside,	2	26
Miscellaneous outside,	4	6
Total,	40	174

NATIONALITY OF PERSONS KILLED OR INJURED.

	Irish.	Welsh.	American.	English.	Scotch.	German.	Swedes.	Hungarians.	Polish.	Italians.	Total.
Killed or fatally injured,	14	3	4	5	1	3		3	7	. .	40
Injured,	43	24	31	21	5	15	1	13	19	2	174
Total,	57	27	35	26	6	18	1	16	26	2	214

Comparative Statement of Fatal and Non-Fatal Accidents and there Causes for Six Years.

	1885.	1886.	1887.	1888.	1889.	1890.	Total for six years.
Fatal accidents.							
Explosions of carbureted hydrogen gas,	6	1	2	4	2	1	16
By falls of roof and coal,	11	17	24	21	28	23	124
Crushed and run over by mine cars,	8	3	12	5	7	7	42
By explosions of powder and blasts,	3	4	4	5	6	2	24
By falling down shafts,	1	3	6	2	. .	2	14
Miscellaneous causes inside,	4	1	1	3	1	2	12
Miscellaneous causes outside,	1	4	3	6	8	3	25
Total of the respective years,	34	33	52	46	52	40	257
Non-fatal accidents.							
Explosions of carbureted hydrogen gas,	14	15	13	31	29	43	145
By falls of roof and coal,	26	36	48	37	33	49	229
Crushed and run over by mine cars,	12	21	30	22	31	36	152
By explosions of powder and blasts,	5	9	19	18	16	17	84
By falling down shafts,	. . .	2	. . .	. . .	. . .	. . .	2
Miscellaneous causes inside,	13	7	20	10	19	21	90
Miscellaneous causes outside,	6	6	16	13	10	8	59
Total of the respective years,	76	96	146	131	138	174	761

COMPARATIVE STATEMENT OF CASUALITIES AND EMPLOYES FOR SIX YEARS.

	Killed.	Injured.	Total.	Total number of employes.	Number of employes to each casualty.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal to each casualty.	Number of tons of coal mined to each employe.	Total number of tons of coal mined.
1885,	34	76	110	10,656	96.50	73,243.04	54,068.40	35,283	364 3/10	3,881,202.09
1886,	33	96	129	13,027	101	128,286.09	44,098.50	32,817	325 53/100	4,233,456
1887,	52	146	198	13,420	67.78	96,590	34,543.30	25,471	375 3/4	5,043,316.15
1888,	46	131	177	15,067	96.40	118,220	40,729	30,709	360 23/100	5,435,537.51
1889,	52	138	190	16,102	84.74	97,488	33,818	24,562	289 24/100	4,666,891.09
1890,	40	174	214	15,759	73.64	125,907	29,997	24,390	331 1/10	5,229,027.03
Totals,	257	761	1,018	84,031	520.06	639,734.13	237,253.120	173,232	2,047.15	28,489,433.07
Average,	42 5/6	126 5/6	169 2/3	14,005.1	86.67	106,622.2	39,542.18	28,872	341.19	4,746,673.03

Conditions of the Collie

The quantity of coal produced during the year 1890, has increased 562,236 tons over that of the previous year. The breakers were in operation on an average 185.76 days producing a total of 5,229,027 tons of coal. The increase of breaker time over last year being 17.29 days. The ventilation of the mines is greatly improved; by referring to table A, in this report, it will be seen that there is 467 cubic feet of air per minute in the intake to each person employed in the mines. Ten new ventilation fans have been erected to furnish fresh air for the inside workings which are giving general satisfaction as regards ventilation.

In visiting the underground workings, I find that a large number of the miners are indifferent in regard to standing their props and timbers properly for the purpose of securing the roof of their working places.

When it becomes necessary to stand props or timber for safety, it is reasonable to presume that they should be stood in a proper manner; I have repeatedly called the attention of the miners to this loose way of standing their timbers which are generallyplaced in every conceivable way but the right one, and the excuse has usually been that a shot has placed them in the condition that they were found.

While there may be some truth in regard to the coal flying from a blast displacing some of them, I do not think it is the case with the majority that I find displaced. I have called the attention of the inside bosses to this loose way of standing props and timbers by the miners where they have charge, as it is dangerous and unworkmanlike and shows a bad state of discipline by those bosses whose duty it is to see that the miner stands his timber in a proper manner, and that the roof is secured as the workings advance, as one-half of the fatal accidents this year were caused by falls of roof and coal which occurred at or near the working faces. While the victims themselves are somewhat to blame, are the bosses, where such timbering and loose discipline exists, entirely blameless?

Arbitration.

On April 13, 1889, I received a letter from James B. Davis superintendent for John C. Haddock, which stated that the Bennett Seam in the Black Diamond shaft had been abandoned and would be allowed to fill with water. On March 18, 1890, my attention was called to the water in the Bennett slope oozing through the barrier pillar on the East Boston side, I therefore wrote E. F. Payne the following notice:

Pittston, Pa., *March 22, 1890.*

E. F. Payne, Esq.,

Superintendent East Boston Shaft:

Dear Sir: I find that the water in the Bennett slope of the Black Diamond shaft, operated by J. C. Haddock, has accumulated to such an extent that there is a possibility of the pillar between you and them bursting out by the pressure of water and endangering the lives of the men working on the rock plane in the Cooper Seam of your mines.

Therefore I want you to keep your men out of this portion of your shaft until the danger has been removed.

Your truly,

H. M. McDONALD,
Inspector of Mines.

On March 26, 1890, I visited the Black Diamond and East Boston shafts, when Mr. Payne asked for an arbitration in regard to the stoppage of his men in the Cooper seam referred to. I granted his request. Mr. Payne appointing Mr. H. S Reets, mining engineer, of Wilkes-Barre, as arbitrator on part of the lessees, W. G. Payne & Co., I naming Mr. J. H. Bowden, of Wilkes-Barre, chief engineer for the Susquehanna Coal Company, as the arbitrator to represent the mine Inspector. These two arbitrators, Messrs. Reets and Bowden, met and named Mr. K. M. Smith, of Alden, as the third arbitrator, or referee.

The following is the testimony of the witnesses and decision of the arbitrators. The board of arbitrators met in the office of Mr. H. S. Reets, Wilkes-Barre, on April 18, 1890.

H. McDonald, Inspector of the Second anthracite district, sworn and examined.

Q. Please state the reason this board of arbitration is called?

A. In the fall of 1889, about October 7, the Bennett seam, lower workngs in the Black Diamond mines, were abandoned and allowed to fill with water. The East Boston and the Black Diamond colliery barrier pillar being so small, that in my opinion it endangered the lives of the men working on the rock plane of the East Boston Cooper vein. On the 22d of March, I wrote to the superintendent of the East Boston mines, telling him to take his men from the point referred to. On Tuesday, March 25, I went to the East Boston mines to see the superintendent in regard to the sufficiency of the strength of the barrier pillar, and Mr. Payne demanded an arbitration as provided for by the ventilation law. I asked Mr. Payne to name his arbitrator, he named Mr. Reets and I named Mr. Bowden, both of Wilkes-Barre, they appointing Mr. Smith, of Alden, in compliance with article 17, section 1, of the ventilation law of the State of Pennsylvania, approved June 30, 1885.

Q. In your opinion what is the thickness of the pillar at its thinnest point?

A. According to the tracing, 25 or 30 feet in the Bennett vein.

Q. With your knowledge of the vein and the character of the strata under and overlying it, what head of water do you think the pillar would safely carry at the point mentioned?

A. I claim it would not be safe to hold 35 feet of water vertical height.

Q. Mr. McDonald can you tell approximately the head of water at this point?

A. Between 40 and 50 feet.

Q. Where in your opinion is the weakest point in the barrier pillar under the present conditions?

A. It is in the Bennett seam, about 75 feet vertical below the level where the water flows to the foot of the Black Diamond shaft, being the third lift on the west side of the Bennett slope in the Black Diamond colliery.

Q. Are there any other points in this pillar that you consider exceptionally weak?

A. There is one above it.

Q. About how many feet above?

A. Four or five hundred feet above on the pitch.

Q. What is the thickness at this point approximately?

A. That I cannot tell, my tracings do not close; that is why I consider it unsafe.

Q. What is the head at this point?

A. About 40 or 50 feet.

Q. Are there any weak points below the third lift?

A. None that would cause me to stop the men working in the East Boston.

Q. What is the character of the vein in reference to retaining water.

A. The coal is medium good for the purpose of holding water, the top is not as good as rock; this is inclined to be shelly falling. The bottom is in the same shape slaty, for about a foot where water coming in contact would make it soft.

Q. Have you visited the East Boston side of the pillar since the water has reached the overflow level?

A. No, I have not.

Q. How high was the water in the Black Diamond mines when you inspected the barrier pillar on the East Boston side?

A. About one hundred feet on the pitch above the third lift.

Q. Did you notice any water oozing through the pillar at this time?

A. The water was coming through at different points in small streams trickling in some places about the size of a straw.

Q. What part of the seam did you notice the water coming through?

A. Through the bottom; the whole face of the coal was very wet.

Q. Did you hear or notice a stream running under the floor?

A. I did not.

Q. Did you notice any perceptible effect of the water upon the roof?

A. I did not.

Q. In going through the East Boston and the Black Diamond workings of the Bennett vein, what have you observed as the general condition of the roof?

A. The roof was middling fair while working.

Q. Has there been any settling or squeeze in these workings?

A. There has been, along the barrier pillar below the weak point.

Q. State about how near the weak point.

A. About 200 or 300 feet below or possibly closer in places along the barrier pillar. Near this weak point, the roof is down for 50 or 60 feet in length from over the workings, but not from over the pillars.

Q. Was there any squeeze of the pillars in that neighborhood?

A. Not that I know of.

Q. Where is the closest squeeze?

A. About 60 feet below this weak point.

Q. Have you any knowledge of pillars being robbed in the Black Diamond and where is the weakest point in this vein?

A. I regard the bottom as the weakest; the pillars were never robbed out in the Bennett seam, but in the Cooper they were.

Mr. Auman, engineer for the Black Diamond Coal Company, sworn and examined.

Q. What surveys have you made bearing on this case?

A. We have surved the workings in the Bennett Vein on Mr. Payne's side of the line as far as we could go to station 39; all of which is represented on the map, "Exhibit A."

Q. You have these surveys closed?

A. No they cannot be closed.

Q. Did you connect with any of the survey stations in the East Boston?

A. No, I don't remember.

Q. Do you know how your surveys agree with other previous surveys along this pillar?

A. I have only the information I gathered this morning from seeing the map marked "Exhibit A." However Mr Reets informs me that where our work connects with his, they agree.

Q. Did you survey the barrier pillar on the Black Diamond side of the mine the entire distance from the shaft level to the bottom of the workings?

A. I did not.

Q. What portion did you make survey of?

A. Only the dip breasts below the bottom west gangway and the faces of the bottom west gangway No. 5 on "Exhibit A".

Q. You have no information of your own as to the barrier pillar of the third lift?

A. Only from old maps, that is all.

Q. Can you name the party who made these surveys?

A. About half the pillar was surveyed by Mr. Hick, the other half by Mr. Hartwell; Mr. Hick above the third lift, and Mr. Hartwell below the third lift to our surveys as stated before.

Q. Have you any idea as to the thickness of the barrier pillar at the third lift from your own surveys?

A. I have not.

Q. From all the information from other maps, what would you regard the thickness of the barrier pillar at the third lift?

A. I regard the pillar as being fifty feet.

Q. On the map furnished the mine Inspector, there appears an indentation in the pillar at the third lift which reduces the thickness to about 28 feet, is not that so, and who is the authority for showing this?

A. Yes, the mine Inspector's map does show this; Mr. Hartwell was the engineer who placed this upon the map; I have no personal knowledge whether it is correct or not. The Black Diamond mine map does not show this indentation.

Q. About 200 feet below the third lift, the map, "Exhibit A," shows the pillar to be about 38 feet in thickness Do you regard that thickness as correct from your information?

A. I do.

Q. At the second lift, "Exhibit A," shows the pillar to be 18 feet thick. What is your knowledge as to the correctness of that?

A. From my knowledge I regard it as correct.

Q. Name the elevations of the narrower portion of the second, third and a point 200 feet below the third lift in relation to the point near the shaft where the water overflows?

A. At the second lift about 40 feet, at the third lift about 95 feet; 200 feet below the third lift about 134 feet lower in elevation then this overflow.

Q. These elevations were not taken by you at the faces, but approximated from the elevations taken on the slope?

A. Yes, sir.

Q. How far is you surveys of the barrier pillar on both sides did you observe the condition of the floor and roof? Please describe how you found them from the overflow water level down to the fifth lift.

A. In the East Boston mines opposite the second lift of the Black Diamond slope at station 27, the roof had fallen to within 15 feet of the barrier pillar; about ten feet in height above this point, as far as I surveyed, the roof and floor along the line were in good condition from a point opposite the second lift in the Black Diamond mine, to a point opposite the third lift in the same mines, the roof was in fair condition and the floor was also in good condition; from the last mentioned point to the point opposite the fourth lift, the next pillar to the barrier pillar was slightly squeezed and going from the land line, the workings were closed beyond the first pillar from the fourth lift to the point at which we ended our survey near station 39. From the fifth lift to station 39, the next pillar to the barrier pillar was badly squeezed, and the barrier pillar had peeled slightly; on the Black Diamond side of the barrier pillar, the small portion which was surveyed by me was in excellent condition at the time of the survey.

The Board of Arbitrators resumed taking testimony on April 22, 1890.

The testimony of Mr. Auman, engineer:

Q. Since your last testimony you have made the surveys for the elevations of the points mentioned in the East Boston mines.

A. Yes, sir.

Q. What did you find the elevation of the point oposite the second lift from below the overflow level to be?

A. I found it to be 27 feet.

Q. What did you find the point opposite the third lift from below the overflow?

A. I found it 92 feet.

Q. What did you find the point 200 feet below the last mentioned point on the pitch below the overflow?

A. I found it 121 feet.

Q. This was the point your estimation made 124 feet?

A. Yes, sir.

Q. What pitch has the seam at that point?

A. About eight degrees.

Q. Did you make any observation as to the roof and floor of the seam?

A. Yes, sir.

Q. Please state how you found the floor all the way down?

A. At about station 25, on "Exhibit A," to the face of barrier, I found the bottom bone taken up and the slate underneath very hard and sound. At station 27 we found the same condition; in fact all the way to the bottom with the exception of first and second points. The bone taken out and the bottom was hard and sound.

Q. Did you find any soft bottom?

A. The bottom was all hard as far down as we went.

Q. Please give us how you found the roof of the seam.

A. Above station 23 to the face of the breast, the top was all standing with the exception of 40 to 50 feet near the face. In the next breast below station 21 and the breast in which 22 and 27 are, the top had fallen to within two feet of the face. There was about three and one-half feet of slate over the vein and then hard sandstone. And the breasts which contained stations 28, 29 and 30, the condition was the same, from station 30 to station 36 the roof was clear, all in place and was slate. At station 36 the slate thins out and the sandstone forms the roof; from station 36 to 37 the conditions are the same and the roof standing sound; below station 37 the slate forms the roof again, and there are one or two slight falls. The pillar next to the barrier pillar is slightly squeezed.

Q. How did you find the seam in relation to holding water?

A. We found the water oozing through in the center of the vein parting The center is a bony or soft slate about 9″ thick and a little water was oozing through the bottom bench of coal; there was no water coming through next the roof or next the bottom. We examined the roof and floor along the rib at points about on an average of every 75 feet; I am satisfied there was no water running under the floor except where the bottom bone had not been taken up.

SHAFT
TOP OF WATER
LIFT No 1
No 2
SLOPE W
BL
EAST

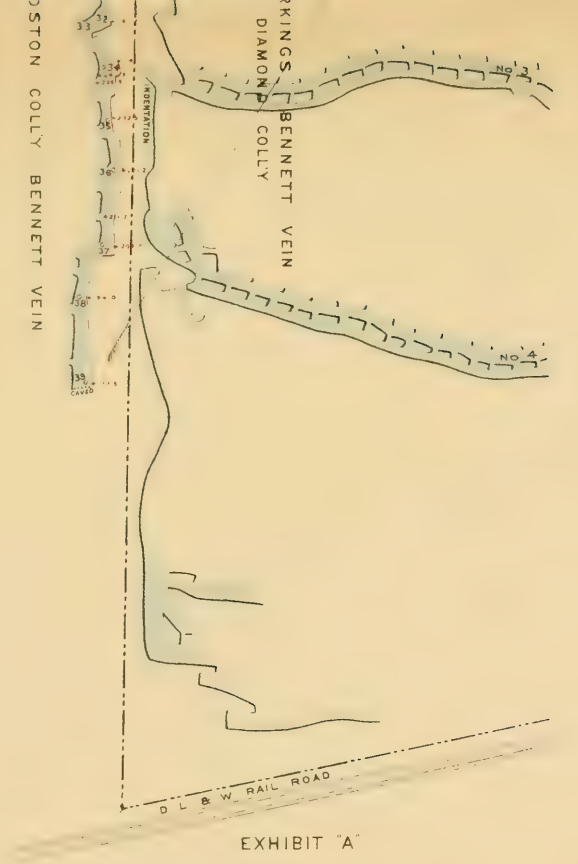


EXHIBIT "A"

ATKMAN & AUMAN Engineers
WILKESBARRE.

Q. What quantity of water did you observe running through the seam?

A. The water came through the coal; there was no point where it ran faster than oozing and dropping, there was no steady stream.

Q. About what quantity of water was running near the rib at the lowest point you reached?

A. As near as I can remember all the water running down the line breast would about fill a one inch pipe on an 8° pitch. This water which I have estimated, I think accumulated between the second lift of the Black Diamond and the last point reached in the survey, viz: station 39.

Q. Have you made an estimate of the quantity of water in the Bennett seam of the Black Diamond mine above the last point mentioned in your levels, viz: 200 feet below the third gangway?

A. We have made an estimate and we found the contents of water in the Black Diamond mine above the point we mention, about 69,000,000 gallons; this calculation is based on the mine map and seven feet thickness of the seam.

A few more witnesses were examined in regard to the quantity of water coming through the pillar; they all coincide with the above testimony of Mr. Auman, which closed the board in the taking the testimony of witnesses. The following is the report of the arbitrators:

WILKES-BARRE, PA., *April 30, 1890.*

H. MCDONALD, *Inspector of Mines, Second District Anthracite Coal Field, and* W. G. PAYNE & CO., *operators East Boston Colliery, Kingston, Luzerne county, Pennsylvania:*

GENTLEMEN: We herewith transmit our report relative to strength of barrier pillar between the East Boston and Black Diamond mines, together with testimony in full of all witnesses examined, also a map marked "Exhibit A," showing location, outline, levels and other data in regard to pillar in question according to latest surveys and construction. From the facts ascertained by the evidence submitted and a personal visit to the mines. We arrive at the following decision:

It is unsafe to work the lower levels of the Bennett vein and connections in the East Boston mines, so long as the present body of water is allowed to stand on the Black Diamond side of the barrier pillar for the following reasons:

First. While the surveys of the East Boston side of pillar are entirely satisfactory, they are not so on the Black Diamond side; there being a material difference as to thickness of pillar near the third level Black Diamond slope, a specially weak point under the most favorable construction.

Second. The general characteristics of the Bennett seam are not favorable to holding a heavy pressure of water.

Third. As the water raised on the Black Diamond side of pillar the

additional pumps required to take care of it in the East Boston Bennett seam, indicate a weakness of the pillar.

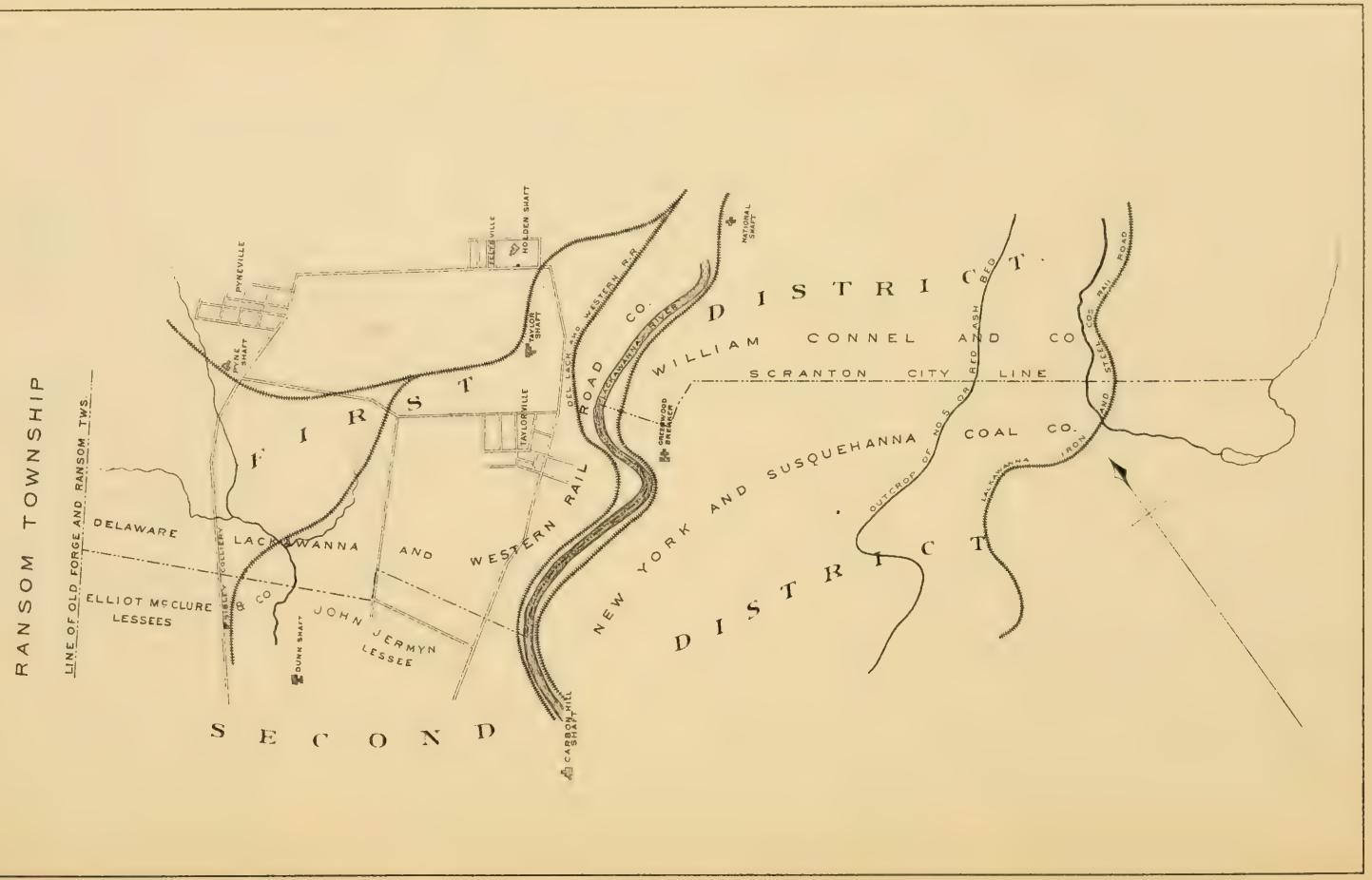
Fourth. While it is possible that the barrier pillar may stand an indefinite time under the present conditions, the conditions are liable to change by falls similar to those already described by witnesses, and the working of the other seams in the vicinity; therefore, placing additional strain on the pillar which already shows signs of weakness by spalling of its top bench, and although the barrier pillar now stands intact with the water flowing to the Black Diamond shaft sump, we recommend the head be reduced 92 feet vertical height below the present overflow and maintained at this level, this being the third level of the Black Diamond slope, before and during the period that men are permitted to work the lower levels in Bennett and Cooper seams, East Boston mines. We also recommend that no pillars be removed unless the balance of water be taken out.

J. H. BOWDEN,
H. S. REETS,
K. M. SMITH,
Arbitrators.

DIVISION AND BOUNDARY LINE BETWEEN FIRST AND SECOND ANTHRACITE DISTRICTS.

To the Board of Examiners for Mine Inspectors Appointed by the Court of Common Pleas of Luzerne county, Pennsylvania, on the 15th day of January, 1890:

GENTLEMEN: The undersigned, Inspectors of districts Nos. 1 and 2, hereby request you to re-adjust the boundary line between said districts in order that all the coal mined in each of said districts shall be brought out of the openings located in the same districts. We have agreed to the following line of division: Beginning at a point where the line, between lands of the D., L. and W. R. R. Company and Elliott McClure & Co., lessees, intersects the line between Old Forge and Ransom township, thence along line between D., L. and W. R. R. Company and Elliott McClure & Co., lessees, and John Jermyn, lessee, in a southeasterly direction to the center of the Lackawanna river. Thence along said Lackawanna river, between lands of the D., L. and W. R. R. Company and N. Y. and Susquehanna Coal Company, in a northeasterly direction to a corner of Wm. Connell, Sons & Co., N. Y. and Susquehanna Coal Company and D., L. and W. R. R. Company. Thence following line between lands of the Connell & Company, and N. Y. and Susquehanna Coal Company, in a southeasterly and northeasterly direction, through a portion of Lackawanna township, to a corner on the Scranton city line. Thence along said Scranton city line, in a southeasterly direction, to the outcrop of the coal formation. Said boundary line is clearly defined on a map hereto attached and made a part of this petition.


RANSOM TOWNSHIP
LINE OF OLD FORGE AND RANSOM TWS.
DELAWARE
LACKAWANNA
AND
WESTERN RAIL
ROAD CO.
ELLIOT McCLURE
LESSEES
&
CO
JOHN JERMYN
LESSEE
FIRST
DISTRICT
SECOND
DISTRICT
PINEVILLE
PINE SHAFT
HOLDEN SHAFT
TAYLORVILLE
DUNN SHAFT
CARBON HILL SHAFT
DEL. LACK. AND WESTERN R.R.
LACKAWANNA RIVER
NATIONAL SHAFT
GREENWOOD BREAKER
WILLIAM CONNEL AND CO
SCRANTON CITY LINE
NEW YORK AND SUSQUEHANNA COAL CO.
OUTCROP OF NO 5 OR RED ASH BED
LACKAWANNA IRON AND STEEL CO. RAIL ROAD

District No. 1 will then consist of that part of the Wyoming coal field included in the counties of Wayne, Susquehanna and Lackawanna, except that portion of Old Forge township and Lackawanna before referred to.

District No. 2 will then consist of the counties of Sullivan and that portion of the Wyoming coal field situated in Luzerne county, east of and including Plains and Kingston township, and also that portion of Old Forge and Lackawanna townships in the county of Lackawanna, lying south of the boundary line, hereinbefore referred to.

Patrick Blewitt, *Inspector, 1st Dist.*
H. McDonald, *Inspector, 2d Dist.*

Now to-wit: We, the undersigned board of examiners for mine inspectors, in pursuance of the authority vested in us by article 2, section 8, of the act of 30th of June, 1885, have re-adjusted districts Nos. 1 and 2, by the creation of a new boundary line, which said line is set forth in the foregoing petition, signed by the Inspectors of said districts, and the same is now adopted and declared by us to be the boundary line between said districts, subject, however, to the aproval of the court.

John F. Snyder,
H. S. Reets,
James Rowe,
John J. Dougherty,
Thomas G. Thomas,
Examining Board.

Approved by the court, May 9, 1890.

Charles E. Rice, *P. J.*

The No. 14 Shaft Mine Fire.

The following report of the mine fire in No. 14 shaft, Pennsylvania Coal Company, was kindly furnished the inspector by Superintendent John B. Law:

On Monday morning, May 5, 1890, when Fire-boss William Tennant was making his usual examination of the workings of No. 14 shaft, Pennsylvania Coal Company, he met a body of black-damp mixed with wood smoke on the gangway going east from the head of No. 2 plane. It was at a point on the gangway where the air from No. 2 plane gangway made its return to No. 1 plane gangway, and the damp backing up No. 1 plane level, indicated a fire located in the neighborhood of No. 1 plane level.

Tennant at once notified Mine Foreman Henry Jopling, who in turn notified Superintendent John B. Law, and upon examination finding it impossible to go down the pitch toward No. 1 plane level, ordered boards and timber sent to No. 2 plane level, and work was at once commenced to erect brattice to break up the damp now lying between No. 2 and No. 1 plane levels. This work was accomplished by 10 o'clock in the morning, and on reaching No. 1 plane level it was found that the

smoke and damp were coming from the caved workings to the dip of No. 1 plane level. Superintendent Law being satisfied on this point, instructed Mine Foreman Jopling to continue the brattice along the airway to No. 1 plane level to the intersection of this airway, with two narrow places that had been driven from No. 1 plane level in No. 14 shaft to No. 6 shaft level gangway, and known as "Black's Cuttings." Mr. Law felt satisfied that this would be a good point to get water down through a pipe from No. 6 level, which would give a head of one hundred and twenty-five feet; and as there was a considerable quantity of water flowed along No. 6 level, by building a dam across this gangway he felt satisfied that in twenty-four hours he could get a pipe laid through "Black's Cuttings" from No. 6 level, and be able to commence to fight the fire and have a good supply of water to work with.

With this end in view, Law, Thomas Cook and John Reynolds, foreman, and James Kane, fire-boss, entered No. 6 shaft, and on going in to the intersection of "Black's Cuttings" with No. 6 level gangway, commenced the descent toward No. 1 plane level. After going down about 200 feet they noticed their lights grow dim, but being anxious to push their way through, they continued until about half way down, to No. 1 plane level when their lights were extinguished and they were forced to abandon their work in that direction and retrace their steps as hurriedly as possible in the dark. They feeling satisfied that as soon as the brattice (which was being constructed in airway to No. 1 plane level) was completed it would make the "Cuttings" so that pipe laying could be commenced. Reynolds had men commence to build a dam across gangway, and Mr. Law went out to arrange about pipe.

On reaching the shops he was met by Mr. Alex. Craig, superintendent of machinery, who arranged to send pipe to No. 6 shaft at once, and who also sent men to lay them as soon as they arrived. Pipe reached the intersection of the "Cuttings" at three o'clock in the afternoon, and the work of laying pipe began. This work was found to be very difficult on account of the presence of damp, but after many delays and hardships it was completed at 3 o'clock on the following day. During the time occupied in doing this work, the air currents had been increased in this portion of the mine, and necessary preparations made to commence driving down through the cave to find the location of the fire.

The first shift of ten men started to work at 3 o'clock p. m., May 6 in charge of Alex. Thompson, followed by Thos. Cook in charge of the 11 o'clock shift, and Alex. Law in charge of 7 o'clock shift.

The plan of work was to cut down to the fire, then cut around it thereby keeping it from spreading in the caved ground, and lastly to fight it from all possible points in the circuit and put it out if possible. The work of driving through the cave was necessarily slow on account of the difficulty of getting rid of the excavated material, but after two weeks of difficult work a circuit was completed about the fire and a feeling that

JAMES A. KENNEDY.
JOSEPH ARMSTRONG.
LANDON.
SAMUEL
JESSE GARDNER
PETER WINTERS.
THOMAS WILLIAMSON.
H. H. WINTERS
BENJAMIN SAYLOR.
SOSEPH SWALLOW
CONRAD SAX.
HARRISON G. WRIGHT.
GEORGE COOPER.
WILLIAM ABBOTT.
JOHN THOMPSON
ISAAC THOMPSON.
GEORGE PRICE.
J R PRIESTLY
№2 Slope Workings Mined and Fallen.
№2 Slope Workings Mined and Fallen
Pillars Crushed Roof Fallen
MAP
SHOWING LOCATION OF FIRE
SHAFT № 14 PENNA. COAL CO.
See inspectors report, Second Anthracite Dist 1890
SUSQUEHANNA RIVER
WINTERMOOT ISLAND.
MONOCKONOK ISLAND.
PENNA COAL COMPANY
JOHN. SHARPS
JOHN B SMITH P.C.CO LESSEE.
SIMPSON and WATKINS.
HENRY HICE.
PENNA COAL COMPANY
SIMPSON and WATKINS.
PAYNE PETTEBONE
PENNA COAL COMPANY

the principal part of the battle had been fought. During this time a second line of pipe had been laid from the pumps at the foot of No. 14 shaft which gave three more 2½ inch streams with about 60 pounds pressure. The work of advancing upon the fire was now commenced in earnest and progressed fairly well for a few days until they came upon a series of large blowers of gas which were coming from the floor of the mine and were covered by a large fall of rock, and when this point was reached, although they fought with water from both sides of the fall, it was found impossible to put it out, and after working about a week without any apparent advantage it was considered best to flood the mine. This conclusion was reached on the afternoon of May 26 and arrangements were made to take out cars, mules, etc. At 1 o'clock a. m., May 27 this was accomplished and Messrs. Law, Thompson and Reynolds went to No. 6 shaft and closed up the cuttings and arranged the ventilation so that during the progress of filling up the workings with water, the fire could not advance higher up the pitch.

Superintendent Law also had Foreman Thomas Cook arrange the foot of No. 14 shaft (by lengthening out the guides down into the sump) so that the buckets to be used in taking out water could be lowered sufficiently to fill when water was below the rails at foot of shaft. These repairs were completed at 10 o'clock a. m. on the 28th day of May when the water from the various pumps located along the bank of the Susquehanna river, which had been placed there under the direct supervision of John B. Smith, general superintendent, and Alexander Craig, superintendent of machinery, and the process of filling up commenced.

The pumps used were four Worthington duplex, 1 single Worthington, and one centrifugal the capacity of the latter alone being ten thousand gallons of water per minute.

On July 1 water had reached a height of 114 feet when all the pumps were stopped as the water was known to be sufficiently high to drown all the fire district, but as an extra precaution it was thought advisable to allow the water to remain for a few days, and on July 13, the water having risen to a height of 119 feet and everything being in readiness, the buckets and pole pump at No. 14, shaft and the steam pump in slope at No. 6 shaft were started and the work of lowering water begun. By calculation it was estimated that there was about 200 acres of a seam of coal of average thickness of 10 feet submerged and as the natural feed of mine was known to be about 1,100 gallons of water per minute it can be easily understood that it was a work of considerable magnitude.

The accompanying sketch shows a plan of the workings, the location of the fire and a colored line in workings shows the position of the water when 119 feet in shaft. On the 20th day of January, 1891 the water was lowered sufficiently to start the large pumps at foot of shaft which are two in number and of the dimensions as follows: 26-inch steam cylinder 30-inch stroke, with 12-inch plungers double acting, capacity of each being about 1,000 gallons per minute.

The water hoisted by buckets and pump at No. 14 shaft, from No. 2 slope in tank car and by No. 6, shaft slope pump was as follows:

	Gallons.
Hoisted at No. 14 shaft from July 13 to January 20, buckets, 490,738; gallons per bucket, 880, ...	431, 849, 440
Pumped at shaft No. 14, from July 13 to January 1, 168 days, 504,000 gallons per day, ...	84, 672, 000
Hoisted at No. 2 Slope, from August 1 to October 1, tank cars, 12,000 @ 880 gallons per car, ...	10, 560, 000
Pumped at No. 6 shaft slope, from July 13 to October 1, 77 days @ 1,166,400 gallons per day, ...	89, 812, 800
Total gallons hoisted and pumped, ...	616, 894, 240

616,894,240 gallons=5,140,785,333 pounds or 2,570,392 net tons, or an average of 13,670 net tons hoisted per day.

The work at fire, the taking care of ventilation during the progress of filling and taking out of water, the immense amount of labor in connection with the hoisting and pumping of this large volume of water, and fact that all this was done without the slightest accident to any of the persons employed, is a proof of the great care exercised by the various officials of the company and I cannot but compliment them on having such an able and efficient corps.

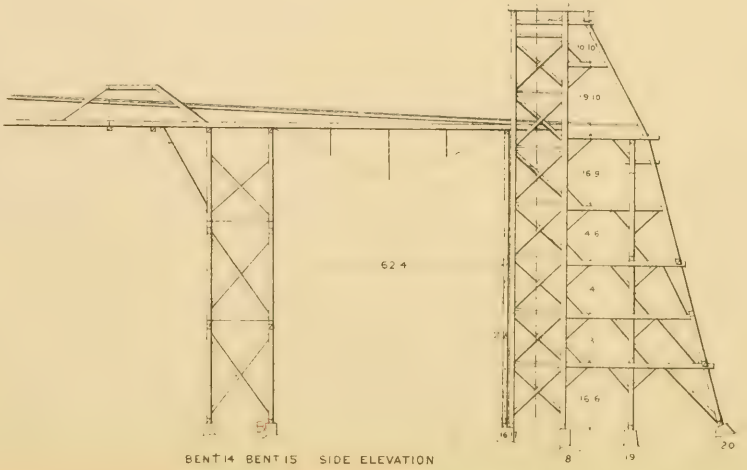
DESCRIPTION OF FATAL ACCIDENTS.

At about 9.30 a. m., on the morning of September 14, 1890, a fatal accident occurred at the Babylon colliery, operated by the Babylon Coal Company, at Duryea, whereby John Glady, Charles Olmstead and a boy by the name of Adolph Pokorny were instantly killed, by the falling of an iron span of trestling sixty-two feet long, which connects the shaft tower with one hundred and fifty feet of wooden trestling to the breaker, over which the mine cars, as they are hoisted from the shaft, are taken to the breaker and dumped and returned empty to the shaft to be sent down and loaded.

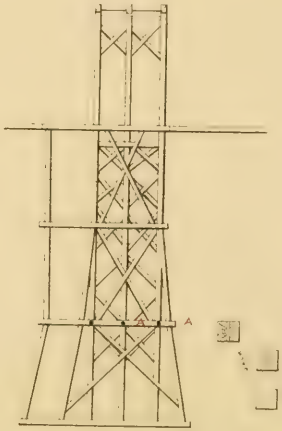
The bent on which the iron trestle rested was bolted to the head frame over the shaft with iron bolts seven-eighths of an inch in diameter and two and a half feet in length, about twenty-five feet from the surface up. The post of the head frame, which was bolted (see sketch) to the bent that the iron trestle rested on, was drawn out of position by the bolts above referred to being screwed up too tight. Richard Manwearing, the outside boss, having noticed that the the post was bent, called the attention of Mr. Glady and Olmstead, who were the carpenters for the colliery, to come out to work in the morning, which was Sunday, and take the iron bolts out of the post and let the post, which was bent, go back to place. Mr. Manwearing and Mr. Glady had some conversation in regard to the way of putting the post back, Glady saying he should

Sketch A. Showing Bridge & Tower Of The Babylon Coal Company At Duryea Pa. Where Accident Occurred Sept. 14th 1890 By Which John Gladys. Chas. Olmstead And Adolph Pokomy Were Killed.

A *Where Glady was standing.*
B *Where Pokomy was setting.*
C *Where Olmstead was standing when they were killed.*
• *The Bolts that were taken out.*



BENT 14 BENT 15 SIDE ELEVATION



FRONT ELEVATION

THIS SHOWS POSITION OF POSTS BEFORE & AFTER BEING JACKED

use a jack-crew and force the post into position if it did not go back of its own accord. The boss told him he must not use a jack-screw by any means, that if he loosened the proper bolts the post would go back again. On Sunday morning, Glady and Olmstead went to work, taking out the bolts referred to. The post not going back as they desired, Glady went to the engineer at the shaft, asking him for a jack-screw, which was given him. He placed it between the upright posts (see sketch) and proceeded to force the posts apart. They had forced the posts eighteen inches apart when they blocked the posts to re-set the jack-screw again. While in the act of doing so, Mr. Vanvaltz, a carpenter, who was working in the breaker repairing some portion of it, had occasion to go to the blacksmith shop for sheet iron. Glady, seeing him, called him over where he, Glady, was working, telling Vanvaltz that he had shoved the post eighteen inches, but had not succeeded in getting it straight. Vanvaltz told him that he was not shoving the post that required straightening; that he was shoving the bent out from under the iron trestling. Glady did not think so, for he continued to force the posts apart. Glady sent Olmstead down for a few pieces of plank while he turned the screw-jack, Vanvaltz going to his work. In a few minutes after the conversation with Vanvaltz, the timber broke which the iron span rested upon, allowing the trestle to fall a distance of (84) eighty-four feet to the ground, instantly killing the three above mentioned. Glady was standing on the cap, marked A, of the first bent using the jack-screw at the time; Pokorny was sitting on the sill, marked B, and Olmstead, being on the ground, heard the crash, started to run and got as far as C, marked on the sketch, when a mine car, which was on the iron span, came down on him. The boy, Pokorny, was not at work at this colliery. While passing, seeing the men at work on the bent, he sat down to watch them.

In my opinion, had Mr. Glady came down on the ground where Vanvaltz was standing while conversing about the post, in all probability he would have seen that he was shoving the post out from under the iron span, as he was considered a careful and competent carpenter.

Mine Improvements During 1890.

The following are the most important improvements made in and around the mines of this district during the year 1890:

Pennsylvania Coal Company.

At No. 14 tunnel a new Guibal fan, 17½ feet in diameter was erected on the air shaft. It has two inlets 8′ 9″ diameter, and running at 42 revolutions per minute, exhausts 94,800 cubic feet of air. This has improved the ventilation of this colliery considerably, as these tunnels were formerly ventilated by a furnace.

At shafts Nos. 1 and 8 a new breaker was built, replacing the old one which was taken down some time previous to the new one being built.

The new breaker is quite an improvement on the old one. It is furnished with first-class machinery for cleaning and preparing coal for market. Its capacity will be about 800 tons per day. It was started to prepare and ship coal on August 25, 1890.

Lehigh Valley Coal Company.

At the Maltby colliery a new Guibal fan, 18′ diameter, was erected on a shaft sunk for the purpose close to the out-crop of the 11-foot seam on the mountain north of the main hoisting shaft. This makes the second fan at this colliery.

In the Prospect colliery a rock tunnel was driven from the Baltimore to the Skidmore seam, a distance of 250 feet, with a sectional area of 9.1 square feet. A tunnel was likewise driven from the Abbott to the Bowkly seam in the same colliery, a distance of 100 feet. Thickness of Skidmore vein 4′ 6″. Thickness of the Bowkly seam 7′.

In the Midvale colliery a rock tunnel was driven from the level of old slope in the Hillman to the five foot seam, a distance of 300 feet. Sectional area 91 square feet. Thickness of seam 4′.

In the Henry colliery two rock planes were driven through the strata from the Baltimore. The first to the Hillman seam on a pitch of 25°, a distance of 650 feet. The other was driven to the five-foot seam, a distance of 550 feet on the same pitch Sectional area 100 square feet. This opens up a large district of coal for this colliery.

At the Heidelburg No. 1 slope a new fan 15′ diameter has been erected on an opening driven for the purpose on the side of the hill, back of the slope opening. It ventilates the new workings at foot of slope, and the old tunnel workings which were formerly ventilated by a furnace

Delaware and Hudson Canal Company.

In Pine Ridge colliery a rock tunnel was driven from the top split of the Baltimore seam to the bottom split, a distance of 165 feet. Sectional area 72 square feet.

In the Delaware shaft a new gravity plane was driven on a pitch of 7°, a distance of 1,100 feet, with a sectional area of 128 square feet.

Delaware, Lackawanna and Western Railroad Company.

In the Hallstead colliery an underground slope has been sunk in the red ash seam 400 feet, which opens up the coal to the dip of the old slope.

A new inside plane has been completed 900 feet in the same seam on a grade of 4°. These improvements will increase the output of the shaft considerably, likewise shortening the transportation to the foot of the main shaft.

Wyoming Valley Coal Company.

At the Forty Fort colliery an underground slope was sunk on a line with No. 1 tunnel in the bottom split of the Baltimore seam, with a sec-

tional area of 84 square feet for a distance of 650 feet, on a pitch of about 8°, at which point a fault was encountered, cutting the vein out entirely. The sinking at this point was abandoned until a drill hole was bored with a diamond drill from the surface down. The reason for boring from the surface was for the purpose of ascertaining the thickness of rock overlying the vein, as there is a considerable depth of quick sand in that locality, and also to find the extent of the fault. The vein was found to have gone up 8 or 9 feet, and it was also found that the strata of rock was ample in thickness to proceed in safety with the slope to get the vein again. Therefore the sinking was resumed in the rock with a grade of 1 in 20 feet for a distance of 145 feet, at which point the vein was again tapped and the slope sunk in the vein 400 feet from the fault, and gangways opened up east and west. The second opening was also completed through the fault, and the air connections completed.

The endless or tail-rope system has been placed in this slope for hoisting, which is giving great satisfaction. The motive power is a pair of second motion steam engines, located in No. 1 tunnel. Cylinders 16″ by 30″, which takes all the coal from the Baltimore seam through No. 1 tunnel to the foot of the eleven-foot slope, a distance of 3,100 feet.

A new steam pump of Goyon Bros., of Ashland, Pa. make, was put in at the foot of the shaft to take care of the water, of which there is a large supply. Steam cylinders 26″ by 37″, which is giving good results.

Butler Coal Company, Limited.

This company has started a new colliery called the Fernwood, a half mile north of the old Everhart or Boston colliery, located in Jenkins' township. The openings consist of two shafts sunk from the surface to the Red Ash seam, a depth of 100 feet. The main or hoisting shaft is 11x18 feet, the other 11x12 feet in area. The connections between the shafts are not completed at this writing.

A new breaker has been built about five hundred feet north of the shafts, to clean and prepare the coal coming from these openings as well as the coal coming from the Boston tunnels which is taken around the mountain by a track more than 2,000 feet long to be prepared for market in the new breaker. Capacity of breaker about 800 tons per day.

At the Phœnix Colliery the old breaker which has been idle for a number of years was taken down and replaced by a new one which is built on the site of the old one. The machinery in this breaker is of the best for cleaning and preparing coal for market; the capacity is about 800 tons per day. It is heated all through by steam and all the dangerous parts of the machinery boxed or fenced off. The shaft has been re-timbered and placed in good condition for hoisting coal. A new 20-foot Guibal fan has been erected on the air shaft to ventilate the workings of the shaft.

Miscellaneous Coal Companies.

At the Steven's colliery a new Guibal fan 20 feet in diameter was erected on the air shaft connected directly to the crank of the fan· all the connections to the fan are not completed at this writing.

At the Avoca colliery a new fan 12 feet in diameter was erected on the air shaft which ventilates both seams in the shaft and does away with the furnace which ventilated the bottom vein.

At the clear Spring colliery a new Guibal fan 20 feet in diameter has been erected on the air shaft taking the place of the old Dawson fan which has been abandoned. This fan increases the quantity of air considerably.

At the " William A" colliery two new shafts have been sunk from the surface to the Red Ash seam, a depth of 164 feet by William A. Connell Sons and on the west side of the Lackawanna river in Old Forge township, Lackawanna county.

The hoisting shaft is 16½x11. The other shaft which is used for hoisting and lowering men and for ventilation is 27x11 feet area. A new Guibal fan 17 feet in diameter has been erected on the air shaft.

A new breaker has been built and supplied with first-class machinery for cleaning and preparing a large output of coal; the capacity of breaker is about 1,000 tons per day. It was started to prepare and ship coal in the month of May, 1890. The machinery in and around the breaker is properly fenced or boxed off for the safety of the employes.

The Babylon Coal Company, operated by Simpson, Watkins & Co., has opened up a new colliery on the west side of the Lackawanna river, opposite the town of Duryea. The openings consist of two shafts sunk to Red Ash seam, a depth of 289 feet. The hoisting shaft is 12x16, the other shaft is used for an air shaft and for hoisting and lowering the men; it is 12x18. A new fan has been erected on this shaft 20 feet in diameter which supplies the workings with a large quantity of air. A new breaker has been erected which is a large and commodious structure with a capacity of 1,200 tons per day. It is heated throughout with steam. It was started to prepare coal for market in the month of July, 1890. An inside rock tunnel was driven from the 5-foot to the 6-foot seam, a distance of 100 feet; sectional area 12x7.

Jermyn & Co. have opened a new colliery close to the town of Old Forge in Lackawanna county. The openings consist of two shafts sunk from the surface to the Red Ash seam, a depth of 236 feet. A new fan 18 feet in diameter has been erected on the air shaft, which supplies the workingmen with a large quantity of fresh air.

A new breaker has been built and supplied with the latest improved machinery for cleaning and preparing coal for market. Its capacity is about 800 tons per day. It started to prepare and ship coal in the month of July, 1890.

TABLE A—*Showing the Quantity of Air Circulating through the Mines of the Second Anthracite District at the end of the Year 1890.*

Number.	Name of Mines.	Name of the Operators.	Number of fans or furnaces.	Number of persons employed in the mines.	Number of separate splits of air.	Cubic feet of air at the intake.	Cubic feet of air at or near the face of workings.	Cubic feet of air at the outlet.
1	Barnum No. 1 and 2 shaft	Pennsylvania Coal Company	2	307	7	148,600	134,800	164,100
2	Laws shaft	" " "	1	153	4	52,260	38,840	62,400
3	Shaft No. 13	" " "	1	150	3	71,310	57,255	66,450
4	Old Forge shaft	" " "	1	254	4	87,235	79,380	113,020
5	Shaft No. 9	" " "	1	94	2	40,800	35,300	44,100
6	Shaft No. 10 and 10 Jr	" " "	1	161	4	66,400	65,900	79,800
7	Abbott's slope	" " "	1	70	2	23,000	19,500	25,200
8	Shafts No. 1 and 8	" " "	1	179	4	65,580	58,180	65,960
9	Slope No. 4	" " "	1	79	2	28,450	22,390	29,101
10	Hoyt and No. 7 shaft	" " "	1	165	7	125,190	107,820	146,730
11	Shaft No. 5	" " "	1	91	3	52,020	46,120	53,360
12	Shaft No. 6	" " "	1	95	2	37,500	12,500	41,000
13	Shaft No. 11	" " "	1	45	1	15,400	15,160	15,620
14	Shaft No. 14	" " "	1	225	4	104,000	83,410	111,020
15	Tunnels No. 1, 2, 3 and 4	" " "	1	186	5	131,740	96,200	128,850
16	Shaft No. 4	" " "	1	15	2	66,410	31,755	67,500
17	Prospect shaft	Lehigh Valley Coal Company	1	127	7	156,146	111,007	164,476
18	Oakwood shaft	" " "	1	67	3	55,972	46,800	56,763
19	Midvale slope	" " "	1	104	5	66,380	64,300	65,800
20	Wyoming shaft	" " "	2	207	6	137,730	116,900	141,730
21	Henry shaft	" " "	2	245	6	217,360	110,690	240,890
22	Mineral Spring slope	" " "	1	78	2	36,500	14,000	40,000
23	Coal Brook slope	" " "	1	30	1	45,000	10,000	46,000
24	Exeter shaft	" " "	2	108	3	85,100	55,880	73,500
25	Heidelburg Shaft	" " "	1	70	2	57,210	23,400	60,215
26	Heidelburg slope	" " "	1	74	4	74,400	66,600	84,800
27	Maltby shaft	" " "	2	139	3	81,600	62,800	82,000
28	Enterprise shaft and slope *	" " "	2					
29	Mill Creek slope	Delaware and Hudson Canal Company	1	82	3	33,080	30,840	33,150
30	Delaware shaft	" " " "	1	219	3	56,738	54,545	56,720
31	Pine Ridge shaft	" " " "	2	268	4	118,000	69,620	106,800
32	Laurel Run slope	" " " "	2	211	5	135,556	77,042	96,128
33	Pettebone shaft	Delaware, Lackawanna and Western Railroad Co.	1	46	3	147,040	70,600	152,200
34	Hunt shaft *	" " " "	1					
35	Hallstead shaft	" " " "	2	346	7	154,130	134,360	165,030
36	Forty Fort shaft	Wyoming Valley Coal Company	1	97	4	64,128	25,059	76,118
37	Harry E. shaft	" " "	1	95	2	49,780	42,900	51,100

* Been idle all year.

TABLE A– *Continued.*

Number.	NAME OF MINES.	NAME OF THE OPERATORS.	Number of fans or furnace.	Number of persons employed in the mines.	Number of separate splits of air.	Cubic feet of air at the intake.	Cubic feet of air at or near the face of workings.	Cubic feet of air at the outlet.
38	Butler shaft	Butler Coal Company	1	77	2	46,380	38,500	58,140
39	Schooley shaft	" "	2	112	3	96,975	91,270	101,250
40	Boston drift	" "	Furnace.	25	2	18,310	15,560	20,315
41	Fernwood shaft.*	" "						
42	Twin shaft	Newton Coal Company	1	138	3	144,810	125,980	163,900
43	Ravine shaft	" " "	1	114	2	157,030	126,050	185,250
44	Mosier shaft	" " "	1	40	3	26,882	5,290	29,860
45	Bennett shaft	Waddell & Co.	1	115	3	52,120	32,340	51,040
46	Mill Hollow shaft	" "	1	109	4	79,250	50,120	80,100
47	Bernice drift	State Line and Sullivan Railroad Company	1	104	2	64,900	17,500	65,680
48	Black Diamond shaft	John C. Haddock	1	174	3	64,920	44,990	97,900
49	Clear Spring shaft	Clear Spring Coal Company	1	285	4	60,000	43,800	60,200
50	Consolidated shaft	Hillside Coal and Iron Company	1	81	2	33,000	24,500	34,140
51	Consolidated slope	" " " "	1	116	3	68,900	58,900	70,900
52	Dunn shaft	John Jermyn & Co.	1	195	4	87,471	73,814	88,684
53	Jermyn shaft No. 2	" "	2	98	2	40,645	36,490	42,180
54	Sibley shaft	Elliott & McClure	1	160	3	38,600	29,200	51,000
55	Greenwood shaft No. 1	Greenwood Coal Company	1	115	2	46,050	28,100	60,100
56	Greenwood shaft No. 2	" " "	1	44	1	26,000	24,440	30,400
57	Greenwood tunnel	" " "	Furnace.	22	1	7,620	7,100	8,200
58	Elmwood shaft	Florence Coal Company	1	190	3	57,070	43,575	64,100
59	East Boston shaft	W. G. Payne & Co.	1	229	4	118,200	82,300	158,200
60	Fairmount shaft	Abbott Coal Company	1	40	1	18,300	7,500	20,200
61	Hillman slope	" "	1	34	1	27,740	19,600	28,250
62	Keystone slope	Keystone Coal Company	2	131	3	69,000	51,870	71,300
63	Columbia shaft	Old Forge Coal Company	1	147	2	63,455	56,630	63,240
64	Phœnix shaft	" "	1	14	1	22,770	13,200	23,100
65	Avoca shaft	Avoca Coal Company	1	127	2	43,600	37,700	52,900
66	Annora tunnel	Annora Coal Company	Furnace.	137	2	45,416	34,520	45,416
67	Katydid slope	John M. Robertson	"	30	2	11,000	8,000	14,500
68	Langcliffe shaft	Langcliffe Coal Company	1	98	2	38,000	35,500	39,250
69	Stevens slope	Stevens Coal Company	1	53	3	22,100	20,050	22,300
70	Babylon shaft	Babylon Coal Company	1	149	2	43,200	35,000	43,900
71	William A shaft	Connell Coal Company	1	148	2	50,200	46,100	58,200
	Total		78	8,543	208	4,677,659	3,457,342	5,011,736

N. B.—There were 1,494 persons employed in main air currents which were not reported as working in any particular split of air, adding which, makes the total number employed under ground equal to 10,037, and an average of 467 cubic feet of air per minute for each person in the intake.

*Air connections not completed yet.

Table I—*Showing Location of Collieries in the Second Anthracite District.*

Name of Colliery.	Name of operator.	Location.	Name of superintendent.	Postoffice address.
Barnum shaft No. 1.	Pennsylvania Coal Company.	Marcy township.	A. Bryden; asst., Alex. Bryden.	Pittston, Luzerne county.
Barnum shaft No. 2.	" " "	" "	" " "	" "
Laws shaft.	" " "	Pittston township.	John B. Law.	" "
Shaft No. 13.	" " "	Old Forge township.	"	" "
Old Forge shaft.	" " "	" "	"	" "
Shaft No. 9.	" " "	Hughestown borough.	A. Bryden; asst., Alex. Bryden.	" "
Shaft No. 10.	" " "	" "	" " "	" "
Shaft No. 10 Jr.	" " "	" "	" " "	" "
Abbott's slope.	" " "	" "	" " "	" "
Shaft No. 1.	" " "	" "	" " "	" "
Shaft No. 8.	" " "	" "	" " "	" "
Slope No. 4.	" " "	Jenkins township.	" " "	" "
Shaft No. 4.	" " "	" "	" " "	" "
Shaft No. 7.	" " "	" "	John B. Law.	" "
Shaft No. 5.	" " "	" "	"	" "
Shaft No. 6.	" " "	" "	"	" "
Shaft No. 11.	" " "	" "	"	" "
Shaft and slope No. 14.	" " "	" "	"	" "
Tunnels No. 1, 2, 3 and 4, No. 14.	" " "	" "	"	" "
Hoyt shaft.	" " "	" "	"	" "
Prospect shaft.	Lehigh Valley Coal Company.	Plains township.	W. A. Lathrope.	Wilkes-Barre, Luzerne co.
Oakwood shaft.	" " "	" "	"	" "
Henry shaft.	" " "	" "	"	" "
Mineral Spring slope.	" " "	Parsons borough.	"	" "
Coal Brook slope.	" " "	" "	"	" "
Exeter shaft.	" " "	Exeter borough.	"	" "
Heidelburg shaft.	" " "	Pittston township.	"	" "
Heidelburg slope No. 1.	" " "	" "	"	" "
Midvale slope.	" " "	Plains township.	"	" "
Maltby shaft.	" " "	Kingston township.	"	" "
Wyoming shaft.	" " "	Plains township.	"	" "
Enterprise shaft and slope.	" " "	" "	"	" "
Mill Creek slope.	Delaware and Hudson Canal Company.	" "	A. H. Vandling.	Scranton, Pa.
Delaware shaft.	" " " "	" "	"	"
Pine Ridge shaft.	" " " "	" "	"	"
Laurel Run slope.	" " " "	" "	"	"
Pettebone shaft.	Del., Lack. and Western R. R. Co.	Kingston township.	W. R. Storrs.	"
Hunt shaft.	" " " "	Wyoming township.	"	"
Hallstead shaft.	" " " "	Marcy township.	"	"
Butler shaft.	Butler Colliery Company.	Pittston township.	S. B. Bennett.	Pittston, Pa.
Schooley shaft.	" " "	Exeter borough.	"	"
Boston drift.	" " "	Jenkins township.	"	"
Fernwood shaft.	" " "	" "	"	"
Forty Fort shaft.	Wyoming Valley Coal Company.	Kingston township.	Alfred Smith.	Wilkes-Barre, Pa.
Harry E. shaft.	" " " "	" "	"	"
Mosier shaft.	Newton Coal Company.	Hughestown borough.	John A. Mears.	Scranton, Pa.
Twin shaft.	" " "	Pittston borough.	"	"
Ravine shaft.	" " "	" "	"	"
Bennett shaft.	Thomas Waddell & Co.	Plains township.	Robert McCutchen.	Miners' Mills, Pa.

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location.	Name of superintendent.	Postoffice address.
Mill Hollow shaft	Thomas Waddell & Co.	Luzerne borough	Robert McCutchen	Miners' Mills, Pa.
Bernice drifts	State Line and Sullivan R. R. Co.	Bernice, Sullivan county	P. O. Blight	Towanda, Pa.
Black Diamond shaft	John C. Haddock	Kingston township	James B. Davis	Plymouth, Pa.
Clear Spring shaft	Clear Spring Coal Company	West Pittston borough	J. L. Cake	Pittston, Pa.
Consolidated slope and shaft	Hillside Coal and Iron Company	Pittston township	W. A. May	Scranton, Pa.
Dunn shaft	Jermyn & Co.	Rendham	Jos. J. Jermyn	"
Jermyn shaft	" "	Old Forge	"	"
Sibley shaft	Elliott, McClure & Co.	"	J. C. McClure	"
Greenwood shafts	Greenwood Coal Company	Lackawanna township	W. G. Thomas	"
Greenwood tunnel	" " "	" "	"	"
Elmwood shaft	Florence Coal Company	Pittston township	Austin Moore	Avoca, Pa.
East Boston shaft	W. G. Payne & Co.	Kingston township	E. F. Payne	Kingston, Pa.
Fairmount shaft	Abbott Coal Company	Pittston township	S. C. Adams	Miners' Mills, Pa.
Hillman slope	" "	Plains township	"	"
Keystone slope	Keystone Coal Company	" "	Jas. H. Hughes	Wilkes-Barre, Pa.
Columbia shaft	Old Forge Coal Company	Marcy township	John A. Mears	Scranton, Pa.
Phœnix shaft	" " "	" "	"	"
Katydid slope	John M. Robertson	Moosic township	John M. Robertson	Moosic, Pa.
Stevens slope	Stevens Coal Company	Exeter borough	A. B. Stevens	Scranton, Pa.
Annora tunnel	Annora Coal Company	Laflin borough	J. N. Conyngham	Wilkes-Barre, Pa.
Langcliffe shaft	Langcliffe Coal Company	Avoca borough	Wm. T. Smith	"
Avoca shaft	Avoca Coal Company	" "	W. H Hollister	Avoca, Pa.
Babylon shaft	Babylon Coal Company	Marcy township	J. L. Crawford	Scranton, Pa.
William A. shaft	Wm. Connell Sons & Co.	Duryea, Old Forge township	Wm. A. Connell	"

TABLE II—*Gives the total number of tons of coal mined and produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Second Anthracite District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Pennsylvania Coal Company.											
Barnum, 2 shafts	Marcy township	192,435	192,435	201.50	473	. . .	5	7,241	19	64	. . .
Laws shaft, Central breaker	Pittston township	. . . . .	. . . . .	. . . . .	. . . . .	. . .	2	. . . . .	. . . . .	. . . . .	. . . . .
Shaft No. 13, Central breaker	Old Forge township	154,061	154,061	206.25	458	. . .	. . .	3,875	32	52	2
Old Forge shaft	" "	155,275	155,275	207	422	1	1	5,553	13	37	1
Shaft No. 9, Shafts No. 10 and 10 Jr., Abbotts slope — No. 10 breaker	Hughestown borough	155,979	155,979	208.50	481	1	1 1 1	6,874	21	59	. . .
Shafts No. 1 and 8	" "	33,020	33,020	83.50	310	. . .	3	1,062	13	27	. . .
Slope No. 4	" "	. . . . .	. . . . .	. . . . .	192	. . .	2	. . . . .	6	31	. . .
Shaft No. 7, Shaft No. 4, Hoyte shaft — Ewing breaker	Jenkins township	165,473	165,473	215,25	156 40 127 162	. . . 1	1 7 2 1	4,682	15 13 6 9	11 2 11 26	. . . .
Shaft No. 5, Shaft No. 6, Shaft No. 11 — No. 6 breaker		115,002	115,002	202.75	97 67	. . . . . .	. . . 1	3,766	9 6	4 11	. . . . . .
Shaft slope and tunnels No. 14		112,855	112,855	167	354	1	. . .	354	24	37	1
Total Pennsylvania Coal Company		1,084,100	1,084,100	*201.18	3,339	4	28	33,407	186	372	4
Lehigh Valley Coal Company.											
Prospect, 2 shafts and slope	Plains township	258,730.18	258,698.18	195.30	616	. . .	6	6,997	40	71	3
Midvale slope	" "	3,569.06	3,559.06	42.45	83	2	3	57	6	7	. . .
Wyoming shaft and slope	" "	81,014.08	81,014.08	116.30	309	. . .	11	2,899	18	46	. . .
Henry shaft	" "	90,653.18	89,331.18	225.20	354	2	. . .	2,565	21	62	. . .
Maltby shaft	Kingston township	31,658	30,923	103.90	207	1	. . .	1,871	20	19	. . .
Mineral Springs, 2 slopes	Parsons borough	30,456 11	30,047.01	88.90	201	. . .	. . .	935	14	20	1

TABLE II—*Continued.*

NAMES OF COLLIERIES	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Exeter shaft	Exeter borough	47,225 10	45,107	87.45	285	. . .	. . .	1,323	19	41	1
Heidelburg shaft	Pittston township	25,000	24,800	111.35	197	. . .	. . .	946	12	19	. . .
Heidelburg slope	" "	34,642	34,567	140.30	189	1	1	1,230	6	18	. . .
Enterprise shaft and slope	Plains township	5,233	5,233	. . . . .	. . . . .	. . .	. . .	. . . . .	. . .	. . . . .	. . .
Total Lehigh Valley Coal Company		608,183.11	603,281.11	*148.72	2,441	6	21	18,823	156	303	5
Delaware and Hudson Canal Company.											
Mill Creek slope	Plains township	57,213.02	57,213.02	154.25	171	1	3	1,760	23	16	. . .
Delaware shaft	" "	196,334.11	196,334.11	214.75	380	. . .	2	5,281	15	35	. . .
Pine Ridge shaft	Miners' Mills borough	180,610 19	174,383 03	234	446	. . .	2	5,356	21	61	. . .
Laurel Run slope	Parsons borough	133,600 09	133,600 09	220.75	375	. . .	. . .	4,448	12	42	. . .
Total Delaware and Hudson Canal Co.		567,759 01	561,531.05	*205.94	1,372	1	7	16,845	71	154	. . .
Del., Lacka. and Western Railroad Co											
Hunt shaft	Kingston township	. . . . .	. . . . .	. . . . .	8	. . .	. . .	. . . . .	12	7	. . .
Hallstead shaft	Marcy township	173,089.03	158,049 03	166	456	1	8	5,359	23	68	. . .
Pettebone shaft	Kingston township	5,992.18	444.18	. . . . .	122	. . .	5	657	12	24	. . .
Total Del Lacka. and Western Railroad Co.		179,082.01	158,494 01	166	586	1	13	6,016	47	99	. . .
Butler Coal Company											
Fernwood shaft	Jenkins township	25,648	23,344	192	96	1	. . .	1,179	6	10	. . .
Boston or Everhart tunnel	Exeter borough	100,351	90,169	187	276	. . .	9	4,851	21	24	1
Schooley shaft	Pittston township	52,173	48,368	197	174	. . .	. . .	3,012	6	15	. . .
Butler shaft											
Total Butler Coal Company		178,172	161,981	*192	546	1	9	9,042	33	49	1

Newton Coal Company.												
Twin shaft,	Pittston borough,				240	1	6	4,266	11	36	. . .
Seneca shaft, Ravine shaft, Mosier shaft,	Seneca breaker,	179,448.10	167,650.06	179.70	278	. . .	2	2,656	18	26	3
	Hughestown borough,	9,666.09	9,563.16	40	73	. . .	2	157	12	7	. . .
Total Newton Coal Company,		189,114.19	177,314.02	*179.70	591	1	10	7,079	41	69	3
Wyoming Valley Coal Company.												
Harry E shaft,	Kingston township,	75,447.17	66,557.17	179.30	222	. . .	3	3,300	16	21	. . .
Forty Fort shaft,	" "	107,875.07	93,595	206.80	333	. . .	7	4,300	21	27	. . .
Total Wyoming Valley Coal Company,		183,323.04	160,152.17	*193	555	. . .	10	7,600	37	48	. . .
Miscellaneous Coal Companies.												
Bernice drifts,	Sullivan county,	63,745.03	61,219.04	199.25	237	. . .	. . .	898	2	37	1
Bennett shaft,	Plains township,	88,640.08	85,400.08	223.75	224	1	1	3,075	10	31	. . .
Mill Hollow shaft,	Luzerne borough,	92,593.03	85,961.08	192.10	274	2	3	3,080	18	24	. . .
Black Diamond shaft,	" "	152,494.03	140,286.02	175	286	3	13	4,833	21	34	. . .
Clear Spring shaft,	West Pittston borough,	169,275.17	157,273.04	192.60	412	3	10	5,522	18	60	. . .
Consolidated shaft and slope,	Avoca borough,	137,348.06	127,954.06	191.25	367	. . .	1	4,979	10	31	1
Dunn shaft,	Old Forge township,	197,195.04	195,076.04	194	535	. . .	2	6,569	15	57	. . .
Sibley shaft,	" "	103,242.09	92,462.02	180.85	297	. . .	2	4,567	13	47	. . .
Elmwood shaft,	Pittston township,	143,468	133,259	210.90	302	1	1	4,639	11	38	. . .
East Boston shaft,	Kingston township,	137,374.10	135,086.14	156	419	2	14	3,859	24	44	. . .
Fairmount shaft,	Pittston township,	8,635	8,145	82	64	1	. . .	299	4	7	. . .
Hillman slope,	Plains township,	47,694.17	43,415.07	267	89	1	2	1,031	9	12	. . .
Keystone slope,	" "	95,498.11	94,384.14	175.90	269	2	1	5,853	8	27	. . .
Columbian shaft,	Marcy township,	142,275.09	137,611.15	247.90	307	. . .	1	4,483	8	35	. . .
Phœnix shaft,	" "	10,701.19	9,701.19	. . . . .	41	. . .	. . .	. . . . .	5	3	. . .
Avoca shaft,	Avoca borough,	49,514.11	48,348.06	199.60	209	1	1	2,272	4	21	. . .
Stevens slope,	Exeter borough,	30,833.05	29,375.16	279.40	130	. . .	2	1,551	11	9	. . .
Annora tunnel,	Laflin borough,	166,504.07	165,735.07	258.80	363	2	6	4,400	6	49	1
Langcliffe shaft,	Avoca borough,	99,363.07	95,147.07	197.10	298	. . .	7	3,169	6	27	. . .
Katydid slope,	Moosic borough,	24,514	22,728	187.25	78	. . .	1	781	3	8	. . .
Greenwood shaft and tunnel,	Lackawanna township,	123,187.06	113,160.06	139.30	345	1	. . .	5,380	16	62	1
Greenwood shaft No 2 (idle all the year),	" "										
Babylon shaft,	Marcy township,	81,090.15	76,128.05	120.50	293	3	3	2,432	12	32	. . .
Jermyn shaft No. 2,	Old Forge township,	20,126.17	20,126.17	69.50	189	2	2	940	15	15	. . .
William A shaft,	" "	53,975	48,602	110	301	1	3	1,781	15	21	. . .
Total miscellaneous coal companies,		2,239,292.07	2,126,589.11	*195.17	6,329	26	76	76,393	264	731	4

* Average.

RECAPITULATION.

	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.
Pennsylvania Coal Company	1,084,100	1,084,100	201.18	3,339	4	28	33,407	186	372	4
Lehigh Valley Coal Company	608,183.11	603,281.11	148.72	2,441	6	21	18,823	156	303	5
Delaware and Hudson Canal Company	567,759.01	561,531.05	205.94	1,372	1	7	16,845	71	154	. . .
Delaware, Lackawanna and Western Railroad Company	179,082.01	158,494.01	166	586	1	13	6,016	47	99	. . .
Butler Coal Company	178,172	161,981	192	546	1	9	9,042	33	49	1
Newton Coal Company	189,114.19	177,314.02	179 70	591	1	10	7,079	41	69	3
Wyoming Valley Coal Company	183,323.04	160,152.17	193	555	. . .	10	7,600	37	48	. . .
Miscellaneous Coal Companies	2,239,292.07	2,126,589.11	195.17	6,329	26	76	76,393	264	731	4
Total of all coal companies	5,229,027.03	5,033,444.07	*185.76	15,759	40	174	175,205	835	1,825	17

NOTE.—In the total production there were 107,423 tons of marketable coal used to generate steam at the mines, and 88,160 tons of coal sold at local sales at the mines in the above. The culm used to generate steam is not included in the above.

*Average.

TABLE III—*Showing the Number of each class of employes at each Colliery in the Second Anthracite District, during the year 1890.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Pennsylvania Coal Company.															
Barnum, two shafts	2	137	125	28	31	21	344	1	2	10	70	45	1	129	473
Laws' shaft, Shaft No. 13.	2	107	114	27	43	18	311	1	3	20	82	40	1	147	458
Old Forge shaft, Shaft No. 9, Shaft No. 10 and Abbot's slope.	2	112	109	20	40	21	304	1	2	10	80	24	1	118	422
Shaft No. 1, Shaft No. 8, Slope No. 4, Shaft No. 4.	2	131	105	30	50	18	336	1	3	14	78	48	1	145	481
Hoyt and Shaft No. 7, Shaft No. 5, Shaft No. 6, Shaft No. 11.	1	88	51	16	24	6	186	1	2	8	79	33	1	124	310
Shaft Slope and Tunnels No. 14.	3	119	113	32	50	10	327	4	4	19	96	63	2	188	515
Total Pennsylvania Coal Company.	3	79	67	16	36	5	206	1	3	12	75	28	1	120	326
	2	72	91	15	34	. . .	214	1	2	18	67	51	1	140	354
	17	845	775	184	308	99	2,228	11	21	111	627	332	9	1,111	3,339
Lehigh Valley Coal Company.															
Prospect shaft and slope, Oakwood shaft.	3	120	130	56	91	20	420	1	12	28	86	65	4	196	616
Midvale slope.	1	14	8	6	5	. . .	34	1	. . . .	4	33	11	. . .	49	83
Wyoming shaft and slope.	1	64	50	28	38	8	189	1	6	11	59	40	3	120	309
Henry shaft.	1	63	50	38	72	22	246	1	6	8	45	45	3	108	354
Maltby shaft.	1	55	20	10	18	2	106	1	5	7	55	31	2	101	207
Mineral Springs, two slopes.	1	45	30	8	23	4	111	1	3	8	50	26	2	90	201
Exeter shaft.	1	46	20	33	20	5	125	1	5	8	51	93	2	160	285
Heidelburg shaft.	1	28	28	11	21	8	97	1	4	5	34	54	2	100	197
Heidelburg slope. Enterprise shaft and slope.	1	42	20	17	16	3	99	1	4	4	41	38	2	90	189
Total Lehigh Valley Coal Company	11	477	356	207	304	72	1,427	9	45	83	454	403	20	1,014	2,441

TABLE III—*Continued.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Delaware and Hudson Canal Company.															
Mill Creek slope	1	26	26	21	16	. .	90	1	3	9	40	27	1	81	171
Delaware shaft	1	74	74	25	41	22	237	1	4	10	86	41	1	143	380
Pine Ridge shaft	1	85	85	42	45	15	273	1	6	12	110	43	1	173	446
Laurel Run slope	1	70	69	26	49	11	226	1	5	10	90	41	2	149	375
Total Delaware and Hudson Canal Company	4	255	254	114	151	48	826	4	18	41	326	152	5	546	1,372
Delaware, Lackawanna and Western Railroad Company.															
Hunt shaft	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	2	. . .	. . .	5	. . .	8	8
Hallstead shaft	2	134	87	46	45	14	328	1	22	10	63	32	. . .	128	456
Pettebone shaft	1	18	18	23	2	2	64	1	17	4	. . . .	36	. . .	58	122
Total Delaware, Lackawanna and Western R. R. Co.	3	152	105	69	47	16	392	3	41	14	63	73	. . .	194	586
Butler Coal Company.															
Butler shaft	1	44	30	7	15	2	99	1	3	5	42	23	1	75	174
Fernwood shaft and tunnel	1	30	17	4	13	2	67	1	2	4	15	6	1	29	96
Schooly shaft	1	75	45	23	27	6	177	1	5	9	60	22	2	99	276
Total Butler Coal Company	3	149	92	34	55	10	343	3	10	18	117	51	4	203	546
Newton Coal Company.															
Twin shaft	1	85	85	30	20	6	227	1	2	5	. . . .	5	. . .	13	240
Seneca shaft	1	40	40	10	20	4	115	1	8	11	80	60	3	163	278
Ravine shaft															
Mosier shaft	1	15	15	6	6	1	44	1	2	5	8	12	1	29	73
Total Newton Coal Company	3	140	140	46	46	11	386	3	12	21	88	77	4	205	591

Wyoming Valley Coal Company.															
Harry, E, shaft	1	51	45	14	23	4	138	1	4	8	40	28	3	84	222
Forty Fort shaft	1	80	80	28	22	8	219	1	6	12	60	32	3	114	333
Total Wyoming Valley Coal Company	2	131	125	42	45	12	357	2	10	20	100	60	6	198	555
Miscellaneous Coal Companies.															
Bernice drifts	1	110	26	6	14	4	161	1	4	5	40	25	1	76	237
Bennett shaft	1	42	42	14	35	7	141	1	4	4	51	20	3	83	224
Mill Hollow shaft	2	90	40	20	29	4	185	1	4	6	44	32	2	89	274
Black Diamond shaft	1	74	65	22	20	7	189	1	5	10	52	26	3	97	286
Clear Spring shaft	1	90	90	40	57	30	308	1	5	8	51	37	2	104	412
Consolidated shaft and slope	2	95	70	18	34	9	228	1	10	8	80	38	2	139	367
Dunn shaft	1	126	126	34	60	15	362	1	5	7	108	50	2	173	535
Sibley shaft	1	70	45	18	36	7	177	1	4	4	74	35	2	120	297
Elmwood shaft	1	59	59	17	33	5	174	1	4	4	80	34	5	128	302
East Boston shaft	2	100	70	38	50	14	274	1	4	10	96	30	4	145	419
Fairmount shaft	1	13	13	5	5	1	38	1	1	2	14	7	1	26	64
Hillman slope	1	17	18	4	8	2	50	1	2	4	14	16	2	39	89
Keystone slope	1	62	75	10	34	5	187	1	3	5	47	23	3	82	269
Columbia shaft	1	60	60	21	34	6	182	1	5	7	74	36	2	125	307
Phœnix shaft	. . .	13	13	5	1	. . .	22	1	1	2	. . .	5	. . .	9	41
Avoca shaft	1	50	25	20	29	7	132	1	2	3	40	28	3	77	209
Stevens slope	1	26	22	8	5	. . .	62	1	4	9	32	20	2	68	130
Annora tunnel	2	77	82	47	26	11	245	3	6	5	35	64	5	118	363
Langcliffe shaft	1	72	72	29	20	4	198	1	3	6	55	33	2	100	298
Katydid slope	1	18	18	3	3	2	45	1	2	2	15	12	1	33	78
Greenwood No. 2, shaft and tunnel	2	78	75	26	27	19	227	1	5	9	60	41	2	118	395
Greenwood No. 2.															
Babylon shaft	1	60	50	15	24	5	155	1	6	7	73	46	5	138	293
Jermyn shaft No. 2	1	50	37	32	7	4	131	1	2	6	15	33	1	58	189
William A. shaft	1	72	72	25	22	3	195	1	5	7	50	40	3	106	301
Total miscellaneous companies	28	1,524	1,265	477	613	171	4,078	26	96	140	1,200	731	58	2,251	6,329

Recapitulation.

Pennsylvania Coal Company	17	845	775	184	308	99	2,228	11	21	111	627	332	9	1,111	3,339
Lehigh Valley Coal Company	11	477	356	207	304	72	1,427	9	45	83	454	403	20	1,014	2,441
Delaware and Hudson Canal Company	4	255	254	114	151	48	826	4	18	41	326	152	5	546	1,372
Delaware, Lackawanna and Western Railroad Company	3	152	105	69	47	16	392	3	41	14	63	73	. . .	194	586
Butler Coal Company	3	149	92	34	55	10	343	3	10	18	117	51	4	203	546
Newton Coal Company	3	140	140	46	46	11	386	3	12	21	88	77	4	205	591
Wyoming Valley Coal Company	2	131	125	42	45	12	357	2	10	20	100	60	6	198	555
Miscellaneous coal companies	28	1,524	1,265	477	613	171	4,078	26	96	140	1,200	731	58	2,251	6,329
Total of all coal companies	71	3,673	3,112	1,173	1,569	439	10,037	61	253	448	2,975	1,879	106	5,722	15,759

TABLE IV—*List of Fatal Accidents occurring in and about the mines of the Second Anthracite Mine District, for the year ended December 31, 1890.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery	Location. Lackawanna county.	Nature and cause of accident.
Jan. 10,	1	Michael Brennan, . . .	Laborer, ...	50	Yes,	5	Fairmount shaft, ...	Pittston township, . . .	Killed by a blast through the pillar. Wm. Hurrey, the miner who fired the blast in the entrance, sent his brother George around to notify Brennan and the miner to get away as he was going to fire in the entrance. Hurrey did not give Brennan ample time to get a safe distance away before the blast exploded with the above result.
Jan. 16,	2	Peter McNulty, ...	Miner, ...	46	"	6	No. 14 shaft, ...	Jenkins township, . . .	Killed by a fall of top coal at face of chamber.
Feb. 21,	3	Wm. Reese, ...	Door boy, ...	15	No.	. .	Clear Spring shaft, ...	West Pittston, ...	Fatally injured by a car knocking the door on him. Died on February 24.
25	4	Martin Fedock, ...	Driver, ...	17	"	. .	Keystone slope, ...	Plains township, ...	Killed by falling under a trip of cars which he was taking to foot of slope.
March 6,	5	James Tolan, ...	Slate picker, . .	16	"	. .	Black Diamond breaker, .	Kingston township, . . .	Fatally injured by being caught on a revolving shaft in the breaker. Toland had gone a considerable distance from where he was at work to where this shaft was, and by some means unknown his coat caught fast on the shaft doubling him up backwards and injuring him so that he died the same day.
18,	6	Richard Thomas, ...	Mason, ...	73	Yes,	7	Keystone slope, ...	Plains township, ...	Fatally injured by being struck by a car while in motion.
20,	7	John Bruha, ...	Laborer, ...	26	No.	. .	Midvale slope, ...	" "	Suffocated by black damp. Patrick Hays, an assistant to the fire boss, was told to take his safety lamp and go with the mining engineers; as they were going to take a survey of a few chambers on the pitch. A short time previously a car had jumped the track and broke down a door, causing the ventilating current to change its course from these chambers. Hays started up one of the chambers with his naked light on his head, causing an explosion of gas which had accumulated on account of the door being broken, burning him and injuring Thomas Bevans by the concussion.

April	8,	8	Patrick Mooney,	Miner,	52	Yes,	6	Black Diamond slope,	Kingston township,	Fatally injured by a fall of checker coal. He had fired a blast in it and failed to bring it all down; he then took his pick to pull it down when a large piece of it came on him. He died the same night.
	24,	9	Thomas Kenney,	Driver,	19	No,		Henry breaker	Plains township,	Instantly killed by falling under a culm car.
May	7,	10	Patrick Horn,	Miner,	40	Yes,	6	Annora drift,	Laflin borough,	Killed by falling of top coal.
	9,	11	John Courtley,	Driver,	16	No,		Twin shaft,	Pittston,	Killed by falling under loaded cars.
	9	12	Benjamin Deeble,	Miner,	26	Yes,	3	Avoca shaft,	Avoca borough,	Fatally injured by falling down the air shaft. Deeble and the mine boss, David Davis, went down the shaft to plumb for putting in the guides. There were two platforms in the shaft, the bottom one as a check. The two men went down on the check platform, and while measuring for the center the bunting gave way on the side of the shaft they were standing on. Davis caught the bunting below him and Deeble went to the bottom, a distance of (80) eighty feet.
	19,	13	Edward Roberson,	Miner,	26	No,		Hallstead shaft,	Marcy township,	Instantly killed by fall of rock at face of chamber.
	29,	14	Joseph Nolis,	"	24	Yes,		Heidelburg slope,	Pittston township	Instantly killed by fall of rock at face of chamber.
June	21,	15	Humphry Hoskings,	"	29	"	1	Jermyn No. 2 shaft,	Old Forge,	Instantly killed by fall of rock at face of the heading where they were working. The attention of Hoskings was called to the condition of the rock; he sounded it and said it was all right, that he could sleep under it, yet a few minutes after it came down on him and seriously injuring his brother who was laboring for him.
	24,	16	Anthony Smiles,	Laborer,	23	No,		Babylon shaft,	Marcy township,	Killed by fall of top rock in face of heading.
July	15,	17	John McCartan,	Driver,	21	"		Mill Hollow shaft,	Luzerne borough,	Instantly killed by a runaway car on inside slope.
	23,	18	John Plebon,	Laborer,	26	"		Elmwood shaft,	Pittston township,	Killed by fall of rock. The miner was drawing back top coal in his chamber; he had fired a blast in the top coal, a large piece of rock which comes with the coal generally, was hanging loose. The miner and Plebon got drills and endeavored to take it down but did not succeed. When the laborer went under it for some coal it fell on him.
Aug.	18,	19	Michael Brady,	"	46	Yes,	9	No. 4 shaft,	Pittston,	Instantly killed by fall of top rock. Brady's miner was taking a skip off the gangway where a curve was in it to make room for the cars. The vein being low the roof rock had been taken down for height some time previous to the accident. The taking off the skip of coal left the rock with an open end, and a blind seam on the fast end of the rock which caused it to give way while Brady was under it.

TABLE IV—*Continued.*

Date of accident	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans	Name of colliery.	Location. Lackawanna county.	Nature and cause of accident.
Aug. 22,	20	Patrick Ford,	Miner,	31	Yes,	3	Annora tunnel,	Laflin borough,	Fatally injured by fall of rock; died on August 24.
Sep. 2,	21	George Ruba,	Laborer,	20	No,	. .	Maltby breaker,	Kingston township,	Killed while getting on the front end of a trip of cars coming from shaft to foot of breaker plane.
12,	22	John McGinness,	Miner,	23	"	. .	Boston drift,	Jenkins township,	Instantly killed by fall of coal while cutting out a prop under top coal he was about to take down.
13,	23	David Jenkins,	"	35	Yes,	3	Old Forge shaft,	Old Forge township,	Killed while cutting out a prop by fall of rock.
14,	24	John Gladie,	Carpenter,	39	"	5	Babylon breaker,	Marcy twp., Luzerne co.,	Gladie and Olmstead were instantly killed by the falling of an iron span of trestling. (See description in report.)
14,	25	Charles Olmstead,	"	35	"	2	" "	" " "	
16,	26	Luke Gibbons,	Plane runner,	22	No.	. .	Henry shaft,	Plains twp., Luzerne co.,	Fatally injured by the bolts which held the break band, allowing the cars to run away on plane.
30,	27	George Whiteman,	Laborer,	35	Yes,	. .	Mill Hollow shaft,	Luzerne borough,	Fatally injured by being struck in the breast with a rail; while putting a car on the track the blocks under the rail slipped; he died October 2.
Oct. 2,	28	Thomas Malta,	Miner,	36	"	2	Wm. H. Connell shaft,	Old Forge,	Killed by fall of rock. Malta's laborer did not come to work this day and the deceased was loading a car when the rock fell on him. How long he was under the rock cannot be determined as the mine boss while making his rounds was the first to find him.
6,	29	Michael Youas,	Laborer,	28	No,	. .	Clear Spring breaker,	West Pittston,	Killed by falling down the shaft. Youas, with four or five others, was employed on the head of shaft to take the cars off the cage and dump them in the breaker. This car being difficult to take off the cage, Youas went to the side of it putting his back against a brace and his feet on the car to shove it off; the car going off the cage, the cage immediately ascended a distance of about six feet, causing Youas to fall into the shaft. The engineer claims that he was given a bell signal to hoist.

	16.	30	John Meyreheoper. . .	Miner, ...	52	Yes.	1	East Boston shaft, ...	Kingston township. . .	Meyreheoper and Beier were instantly killed by a fall of rock they were in the act of taking down in Beier's chamber.
	16.	31	Fred. Beier.	"	38	"	1	" " " . . .	" " . . .	
	27.	32	James Constine. . . .	"	45	"	2	Bennett shaft.	Plains township. . . .	Killed by fall of rider-coal while opening a new chamber
	30.	33	Andrew Arnutick . . .	Laborer.	30	"	2	Jermyn No. 2 shaft. . . .	Old Forge.	Killed by fall of rock.
Nov.	17.	34	Henry Judge.	Miner, ...	31	"	. .	Midvale slope, ...	Plains twp., Luzerne co.	Fatally injured by a fall of roof while taking out pillars. Judge had fired a blast in the coal and went back to see what it had done. he found that the roof rock was not very safe. he took a pick to sound it and while doing so the rock came down on him with the above result He died the next day.
Dec.	9.	35	Thomas Higgans . . .	"	26	. . .	1	Greenwood tunnel.	Lackawanna township. .	Instantly killed by fall of rock.
	10.	36	James Barrey, ...	Track layer. . .	23	No,	. .	Black Diamond shaft. . .	Kingston township. . . .	Instantly killed by fall of rock while passing through an old chamber.
	18.	37	Patrick Burke.	Miner	51	Yes,	3	Shaft No. 10.	Hughestown borough. .	Instantly killed by a premature blast.
	19.	38	James Jiggins.	"	43	"	5	Hillman slope.	Plains township. . . .	Fatally injured by fall of roof while robbing pillars; he died same day.
	29.	39	George Michell. . . .	"	40	No,	. .	Clear Spring shaft. . . .	West Pittston borough. .	Instantly killed by fall of rock. He fired a blast dislodging three props causing the accident.
	29.	40	Robert Harrison . . .	"	32	Yes,	4	Mill Creek slope	Plains township. . . .	Instantly killed by fall of top coal while taking out pillars.

N. B.—One fatal accident was reported which occurred at the Babylon breaker, viz: Adolph Pakorny was killed by the falling of the trestling. Not being regarded as a mine accident it is not included in the above list.

TABLE No. V.—*List of Non-fatal Accidents occurring in and about the Mines of the Second Anthracite Mine District, for the year ended December 31, 1890.*

Date of accident.	Number of accident.	NAME OF PERSON	Occupation.	Age.	Married.	Number of children	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 3.	1	Henry Reap.	Miner.	28	No.	..	Schooley shaft.	Exeter borough, Luz. co..	Slightly injured by a fall of top coal.
8.	2	Ubblie Second	Laborer.	32	Yes.	3	Annora breaker,	Laflin borough, Luz. co..	Injured by falling off elevated water troughs.
17.	3	Henry Jordan.	Door boy.	15	No.	..	Hallstead breaker,	Marcy township, Luz. co..	Back bruised by being struck by end of a prop.
17.	4	Thomas Reap.	"	14	"	..	Delaware shaft	Plains township, Luz. co .	Head painfully bruised by a runaway car.
21.	5	Wm Jones.	Miner.	..	"	..	Stephens slope.	Exeter borough, Luz. co..	Ankle bruised by the oil box of a car knocking a plank against his leg.
23.	6	Byron Sickler.	Driver.	17	"	..	" "	" "	Arm broken in two places by being caught between cars.
24.	7	James Dougherty.	Miner.	..	..	..	Shaft No. 4.	Jenkins twp., Luz. co..	These five men were slightly burned on face and hands by an explosion of gas; Dougherty and Nolan were driving an entrance to the east level heading in the powder mill vein. There was a large pile of loose coal in the place. The gas issuing from among the loose coal ignited from their lights, setting fire to the coal. Tench, Bryden and Alford went to shovel the coal back to put fire out and were burned by an explosion of gas which had accumulated and caught from the burning coal.
24.	8	James Nolan.	"	..	..	..	" "	" "	
24.	9	John F. Tende.	Laborer.	..	..	..	" "	" "	
24.	10	Adam Brydan.	"	..	..	..	" "	" "	
24.	11	Samuel Alford.	"	..	..	..	" "	" "	
Feb. 1.	12	Thomas Crowly.	Laborer.	23	No.	..	Annora breaker,	Laflin borough, Luz. co..	Thumb crushed by being caught between bumpers of cars.
3.	13	John F. Richards.	Miner.	50	"	..	Forty Fort shaft.	Kingston twp., Luz. co..	Head and body cut and bruised by premature blast

5.	14	Richard O'Brine,	Sinkers,	40	Yes,	Pettebone shaft,	Kingston twp., Luz. co.,		These four men were slightly burned on the face and hands by an explosion of gas. While repairing the cribbing in the shaft the platform they were working on was some distance above a vein of coal that gave off considerable gas which came up the shaft to where the men were working and was ignited from their lights.
5.	15	Cornelius Card,	"	42	No,	" "	" "		
5.	16	John Thomas,	"	37	Yes,	" "	" "		
5.	17	Arthur Evans,	"	24	No,	" "	" "		
7.	18	John McKeehney,	Ass't foreman,	44	Yes,	5 East Boston shaft,	Kingston twp., Luz. co.,		The first two were seriously burned and the other three were slightly bruised by the explosion of gas and the concussion. Jones, the miner was driving an entrance to the adjacent chambers which had considerable gas in, he fired a blast in the entrance which was almost through. The assistant foreman and driver-boss took safety lamps and went into the vacant chamber to examine the place, and while doing so, Jones went with his naked light to see what his shot had done. The blast having broken through into the adjacent place where the gas was, Jones ignited it with his lamp causing the explosion with the above result.
7.	19	Charles McKeehney,	Driver boss,	30	"	3 " "	" "		
7.	20	Rudolph Ranking,	Engineer,	36	"	1 " "	" "		
7.	21	David Jones,	Miner,	54	"	8 " "	" "		
7.	22	Wm. Prym,	"	28	"	" "	" "		
9.	23	Fred. Toby,	Miner,	61	No,	Hillman slope,	Plains township, Luz. co.,		Hand severely cut by a piece of rock while standing a prop.
14	24	John Joyce,	"	33	"	Babylon shaft,	Marcy township, Luz. co.,		Leg broken while endeavoring to climb a rope in the shaft.
19.	25	Thomas Finn	Driver,	18	"	Schooly shaft,	Exeter borough, Luz. co.,		Kicked in the face with a mule while hitching it to a car.
28.	26	George Grisley	Sinker,	30	Yes,	3 William A shaft,	Lack'a twp., Lack. co.,		Seriously bruised by falling off platform in shaft.
28.	27	Thomas Stephens,	Miner,	34	"	1 Dunn shaft,	Old Forge twp., Lack. co.,		Leg fractured by the premature explosion of a blast.
March 1.	28	Michael Martinchuck,	Laborer,	28	"	Black Diamond breaker,	Kingston twp., Luz. co.,		Slightly bruised by a runaway car on culm plane
5.	29	Nivam Millhune,	"	25	"	" "	" "		Leg broken by falling off the tower on fan-house.
13.	30	John Robson,	Miner,	28	"	Schooly shaft,	Exeter borough, Luz. co.,		Face and hands slightly burned by a feeder of gas.
17.	31	Wm. Prater,	Fire boss,	34	"	Forty Fort shaft,	Kingston twp., Luz. co.,		Painfully burned on face and hands by explosion of gas.
19.	32	Michael Hanohoe,	Miner,	46	"	9 No. 11 shaft,	Jenkins twp., Luz. co.,		Leg and ankle broken and seriously bruised by fall of rock.
19.	33	Solomon Millard,	Outside foreman,	50	"	1 Katydid breaker,	Moosic, Lackawanna co.,		Small toe cut off by tipple coming down on it.
20.	34	David Reese,	Driver,	16	No,	Midvale slope,	Plains township, Luz. co.,		Kicked in the abdomen by a mule.
20.	35	Patrick Hays,	Timberman,	40	Yes,	5 " "	" "		Face and hands painfully burned by an explosion of gas.
20.	36	Thomas Bevan,	Miner,	40	"	" "	" "		Painfully bruised by the concussion of the same explosion.

TABLE V—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location—County.	Nature and cause of accident.
March 21.	37	James Condon. . . .	Plane runner. .	21	No,	. .	Forty Fort shaft.	Kingston township. . . .	Thumb crushed by a piece of coal falling from car.
25.	38	Michael Mulvery, . . .	Headman . . .	22	Yes,	1	Pine Ridge shaft	Miners Mills borough . .	Leg crushed, caught between car and prop at head of inside slope.
26.	39	Daniel Michell. . . .	Miner.	24	"	. .	Schooly shaft, ...	Exeter borough.	Bruised and cut by a premature blast.
27.	40	Andrew Rutherford. .	Laborer. . . .	51	"	. .	Barnum No. 2 shaft.	Marcy township.	Back and legs seriously bruised by fall of roof rock.
April 4.	41	Joseph Sebonsky. . . .	"	30	No.	. .	Clear Spring shaft.	West Pittston.	Slightly bruised by fall of roof rock.
10	42	Richard Roberts. . . .	Miner.	55	Yes,	1	Pine Ridge shaft.	Miners Mills borough. . .	Painfully bruised by fall of rock while standing prop.
16.	43	Henry Kerke.	Driver.	17	No.	. .	Consolidated slope.	Pittston township	Arm broken by a piece of rock from the roof falling on it.
17.	44	James Annear.	Miner.	45	Yes,	. .	Mill Hollow shaft.	Luzerne borough.	Slightly injured while taking a prop out from under coal.
18.	45	Frank Conaghan. . . .	Runner.	25	No.	. .	Mill Creek slope.	Plains township.	Thumb crushed while putting a car on the track.
21.	46	Michael Shonafskie. . .	Miner.	30	Yes,	. .	Twin shaft.	Pittston borough. . . .	These two brothers were painfully burned by gas. They had fired a blast and struck a feeder of gas and went up with naked lights after eating their dinners.
21.	47	Peter Shonafiskie. . . .	Laborer. . . .	22	No,	. .	" "	" "	
30.	48	Patrick Kelley, ...	Foreman. . . .	45	Yes,	5	Black Diamond shaft. . . .	Kingston township. . . .	Large toe taken off by being caught in the machinery of pump.
May 6.	49	Benjamin R. Jones. . .	Miner.	33	Yes,	4	Schooly shaft.	Exeter borough.	These two men were burned on face and hands by an explosion of gas.
6.	50	Frank Lombardy. . . .	Laborer. . . .	28	No.	. .	" "	" "	
6.	51	John Goosla, ...	"	24	"	. .	William A breaker.	Lack'a twp., Lack. co.,	Wrist broken by being caught between car and tower frame.
12.	52	Andrew Gallah.	"	25	Yes,	. .	Forty Fort shaft.	Kingston twp., Luz. co.,	Back and hips painfully bruised by fall of rock.
21.	53	Peter Feitz.	Miner.	45	"	5	Sibley shaft, ...	Old Forge twp., Lack. co.,	Seriously injured on back by fall of top coal.
22.	54	John Williams, ...	Driver.	19	No,	. .	Wyoming shaft.	Plains township, Luz. co.,	Painfully bruised by falling under a car.
24.	55	William Walker, ...	Laborer. . . .	23	Yes,	2	Babylon shaft, ...	Marcy township, Luz. co.,	Back seriously injured by a fall of top rock.
24.	56	John Martin, ...	"	45	"	2	No. 9. shaft, ...	Hughestown bor. Luz. co.,	Leg fractured by a fall of rock.
26.	57	Charles O'Donnell, . . .	Loader.	22	No,	. .	Wyoming breaker.	Plains township, Luz. co.,	Hips painfully bruised by being caught between car and post of breaker.

	27.	58	Henry Burch.	Miner.	50	Yes.	5	Clear Spring shaft.	West Pittston Luz. co.,	This miner and laborer were burned on face and hands by an explosion of gas.
	27	59	Jacob Lubiskey.	Laborer.	33	No.	..	" "	" "	
	27.	60	John Thomas	Leader.	17	"	..	Clear Spring shaft.	" "	Leg fractured by a mule falling on him.
	29.	61	Hugh Dolan.	Driver.	16	"	..	Harry E shaft.	Kingston township.	Leg broken in two places by being caught by rope on the slope.
June	4.	62	John Shoemaker.	Miner.	30	"	..	" "	" "	Slightly bruised by being struck by a runaway car out of a chamber.
	4.	63	John Mossie.	Slate picker.	16	"	..	Jermyn No 1 breaker.	Old Forge twp., Lack. co.,	Arm broken and shoulder dislocated by being caught on screen shaft.
	10.	64	David J. Price.	Door boy.	15	"	..	Wyoming shaft.	Plains township, Luz. co..	Leg broken by a piece of coal flying from a blast.
	11.	65	John Richardson.	Miner.	24	Yes.	2	Hoyt shaft.	Jenkins twp., Luz. co.,	Face and hands painfully burned by powder while putting a cartridge in a hole.
	12.	67	William Henwood.	"	52	"	..	Harry E shaft.	Kingston twp., Luz. co..	Body bruised by fall of rider coal.
	14.	68	Michael Hogan.	Footman.	23	No.	..	Annora breaker.	Laflin borough, Luz. co..	Leg broken by being caught between car bumpers.
	16.	69	Enoch Shewick.	Laborer.	..	"	..	Clear Spring shaft.	West Pittston, Luz. co.,	Painfully bruised by fall of top rock.
	18.	70	Michael Wylcovich.	Miner.	28	Yes.	1	Heidelburg slope.	Pittston twp., Luz. co..	Slightly injured by fall of rock.
	20.	71	Michael O'Malia.	"	48	"	5	Seneca shaft.	Pittston bor., Luz. co.,	Face and hands burned by gas.
	20.	72	Patrick Moffitt.	Laborer.	30	No.	..	" "	" "	Seriously burned by the same explosion of gas as O'Malia.
	21.	73	George Hutchins.	"	27	"	..	East Boston shaft.	Kingston township	Toes broken by a piece of rock falling on them.
	21.	74	John Robbins.	Driver.	17	"	..	" "	" "	Painfully bruised, thrown from a mule's back.
	21.	75	Alford Haskins.	Laborer.	21	"	..	Jermyn No. 2 shaft.	Old Forge twp., Lack. co.,	Both legs broken by fall of rock.
	28.	76	John Callaghan.	Miner.	46	Yes.	8	No. 7 shaft.	Jenkins twp., Luz. co.,	Seriously injured by fall of rider coal.
	28.	77	William G. Pritchard.	"	40	"	3	Wyoming shaft.	Plains township, Luz. co.,	These two miners were slightly burned by an explosion of gas caused by a length of brattice blown down by a blast which they had fired.
	28.	78	Joseph Abbott.	"	45	"	1	" "	" "	
July	1.	79	William Murdock.	Driver.	15	No.	..	Laws shaft.	Pittston township.	Flesh wound on hip caused by a runaway car.
	7.	80	Thomas Evans.	"	17	"	..	East Boston shaft.	Kingston township.	Index finger cut off while spragging a car.
	7.	81	Patrick Ryan.	Miner.	29	Yes.	3	Laws shaft.	Pittston township.	Leg broken by fall of top coal.
	8.	82	Pat. Walsh.	Driver.	15	No.	..	Slope No. 4.	Jenkins township.	Finger broken while spragging a car.
	8.	83	Joseph Young.	Door boy.	15	"	..	Prospect shaft.	Plains township.	Painfully squeezed between car and prop.
	9.	84	Henry Lloyd.	Driver.	17	"	..	Wyoming shaft.	" "	Seriously injured by falling in front of moving cars.
	10.	85	Francis Davitt.	Miner.	55	Yes.	..	Schooly shaft.	Exeter borough.	Slightly injured by going back to a blast which he thought had missed.
	10.	86	John Stodki.	"	34	"	4	Hallstead shaft.	Marcy township.	Hand broken by fall of checker coal.
	10.	87	Andre Petrynchak.	Laborer.	45	"	..	" "	" "	Thigh broken by fall of checker coal.
	11.	88	John Raskama.	"	40	"	5	Schooly shaft.	Exeter township.	Slightly injured by being struck by a moving car.
	15	89	Anthony O Boyle	Footman.	26	No.	..	Mill Hollow shaft.	Luzerne borough.	Seriously injured by a runaway car on slope.
	15	90	Michael Hillman.	Driver.	18	"	..	Clear Spring shaft.	West Pittston.	Painfully bruised by falling under a moving car.
	15.	91	James Riley.	Miner.	40	Yes.	..	Prospect shaft.	Plains township.	Face and hands burned by gas.
	16.	92	Hugh Hughes.	Laborer.	35	"	2	Langcliffe shaft.	Avoca borough.	Seriously injured by a fall of rock.

TABLE V—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location—County	Nature and cause of accident.
July 18.	93	John Martin.	Miner.	30	Yes.	1	No. 4 slope.	Jenkins township.	Leg broken and cut by a fall of roof rock.
23.	94	Patrick Keefe.	Miner.	40	No.	..	Elmwood shaft.	Pittston township.	Seriously injured by a fall of roof, the same that killed Plebon.
Aug 6.	95	Thomas Crogan.	"	32	Yes.	1	Black Diamond shaft.	Kingston township.	Back bruised by a fall of checker coal.
7.	96	Walter Monagan.	Driver.	15	No.	..	No. 5 shaft.	Jenkins township.	Seriously injured by falling in front of cars.
12.	97	Patrick Scanlon.	Miner.	52	Yes.	5	Keystone slope.	Plains township.	Seriously injured by the fall of roof.
14.	98	Joseph Azari.	Laborer.	33	"	1	East Boston shaft.	Kingston township.	Head and arm cut by fall of coal and bone.
15.	99	Thomas Jackson.	Miner.	25	"	1	Hillman slope.	Plains township	Head and body bruised by coal flying from a blast.
18.	100	John Tench.	Chargeman.	..	"	..	No. 4 shaft.	Jenkins township.	Leg broken by same fall of rock that killed Brady.
22.	101	George Kelley.	Runner.	..	No.	..	Barnum No. 1 shaft.	Marcy township	Hand seriously crushed while in the act of closing a catch on wheel of car.
26.	102	Walter Burke.	Laborer.	27	No.	..	Barnum No. 2 shaft.	Marcy township.	These two men were injured by a fall of soapstone from the roof.
26.	103	John Hoffman.	"	18	"	..	" "	" "	
27.	104	Michael Doran.	Miner.	33	Yes.	3	No. 10 shaft.	Hughestown borough.	Seriously injured by fall of roof.
28.	105	Thomas Klosaski.	Laborer.	35	No.	..	East Boston shaft.	Kingston township.	Head and face cut and back bruised by a fall of coal.
28.	106	William Early.	Slate picker.	12	"	..	Hallstead breaker.	Marcy township.	Seriously injured while sliding down hand railing of the steps of breaker.
29.	107	William Early.	Driver.	16	"	..	Barnum breaker.	" "	Seriously injured by falling under culm car.
29.	108	John Peteracavich.	Laborer.	30	"	..	Langcliffe breaker.	Avoca borough.	Face bruised and cut by falling from the trestling.
Sept. 2.	109	Thomas Jarrett.	"	30	"	..	Wyoming shaft.	Plains township.	Seriously injured by a premature blast.
5.	110	Joseph Abbott.	Miner.	45	"	..	" "	" "	Seriously injured by jumping on cars on slope in violation of the law.
6.	111	Owen C. Evans.	"	34	Yes.	1	Langcliffe shaft.	Avoca borough.	Slightly injured by a premature blast.
6.	112	Edward McGroarty.	"	50	"	6	Black Diamond shaft.	Kingston township.	Slightly injured by fall of roof.
8.	113	Patrick Crossen.	"	40	"	3	" "	" "	Two ribs broken by a premature blast.
9.	114	Michael McNamee.	"	45	"	..	" "	" "	Face and hands slightly burned by an explosion of gas.
11.	115	Arthur Walton.	Driver.	19	No.	..	Wyoming shaft.	Plains township.	Seriously injured by falling under empty trip of cars.

	11.	116	Peter Huggler.	Miner.	45	Yes	1	Sibley shaft.	Old Forge twp., Lacka. co.	Seriously crushed by a fall of roof.
	15.	117	Mike Ostroskie.	Door-tender.	40	"	2	Delaware shaft.	Plains twp., Luz. co.,	Collar bone broken by a prop falling on him.
	16.	118	George Hass.	Miner.	31	"	6	Clear Spring shaft.	West Pittston, Luz. co.,	Face and hand slightly burned by gas.
	20.	119	Patrick Duggan.	"				Old Forge shaft.	Old Forge twp., Lacka. co.	Leg fractured by a fall of coal
	20.	120	George Yomiteus.	Laborer.	28	Yes,		Jermyn No. 2 shaft.	" "	Head and back injured by fall of slate.
	26.	121	John S. Evans.	Miner.	47	"		Pettebone shaft.	Kingston twp , Luz. co.,	Face slightly burned by a premature explosion of powder.
	27.	122	Patrick Granahan.	"	35	No.		Clear Spring shaft.	West Pittston, Luz. co.,	Leg broken by fall of rock.
Oct.	2.	123	Andrew Brockus.	Laborer.	34	"		East Boston shaft.	Kingston township.	Bruised on back and shoulder by fall of roof.
	4.	124	John Hefferon.	Mine boss.	28	"		Mosier shaft.	Hughestown borough.	These men were severely burned by an explosion of gas while examining the old workings; caused by coming on a body of gas with their naked lights.
	4.	125	Thomas Loftus.	Miner.	44	"		" "	" "	
	11.	126	James Monaghan.	Slate picker.	12	"		Mill Creek breaker.	Plains township.	Foot bruised by jumping on cars at the breaker chutes.
	13.	127	William F. Thomas.	Car divider.	33	Yes.	2	Langcliffe shaft.	Avoca borough.	Leg broken while unloading iron rails from a car.
	14.	128	John Walsh.	Door boy.	16	No,		No. 1 shaft.	Hughestown borough.	Leg broken by a mule while on the carriage going down the shaft.
	15.	129	James Henry.	Miner.	45	Yes,	1	Wyoming shaft.	Plains township.	Arm broken by fall of coal that he was barring down.
	16.	130	Joseph Becker.	"	32	"	4	Mill Hollow shaft.	Luzerne borough.	Leg broken by fall of rock.
	17.	131	Michael Berry.	Carpenter.	24	No.		No. 8 shaft.	Hughestown borough.	Leg broken; while putting up a door post it fell on him.
	20.	132	John Quinland.	Driver.	18	"		Prospect shaft.	Plains township.	Kicked in the face and breast by a mule.
	21.	133	Michael Walsh.	Miner.	55	Yes.		Abbott's slope.	Hughestown borough.	Leg fractured by fall of rider coal.
	21.	134	Patrick Dally.	"	43	"	4	East Boston shaft.	Kingston township.	Head and face cut and bruised by a premature blast.
	23	135	Patrick Rightapper.	"	59	"	1	Hallstead shaft.	Marcy township.	Slightly injured by fall of roof.
	26.	136	Andrew Cooalcie.	Helper.	38	"	4	Prospect breaker.	Plains township.	Seriously squeezed between culm cars
	27.	137	Evan Stevans.	Laborer.	21	No,		Bennett shaft.	" "	Seriously crushed by same fall of rider coal that killed Constine.
	27.	138	J. S. McDonald.	Mine boss.	44	Yes,	8	Forty Fort shaft.	Kingston township.	These three men were seriously burned by an explosion of gas; while making an air connection in the six foot vein, from some cause a door was left open, causing the gas to accumulate, which came in contact with McDonald's light causing the explosion.
	27.	139	James Goodfellow.	Miner.	30	"	4	" "	" "	
	27.	140	Wm. Scott.	Laborer.	31	"	3	" "	" "	
	28.	141	William Ryon	Leader	16	No,		Clear Spring shaft.	West Pittston.	Leg seriously crushed by falling off a mule he was riding in the middle of the track and the wheel of one of the cars going over his leg.
Nov	3.	142	John B. Thornton.	Miner.	54	Yes,		Wyoming shaft.	Plains township.	Back injured by a premature blast.
	5.	143	David Hughes.	Driver.	17	No,		Langcliffe shaft.	Avoca borough.	Arm broken by being caught between top of car and roof.
	5.	144	George Matranda.	Laborer.	45	"		Black Diamond shaft.	Kingston township	Painfully burned by an explosion of gas.
	7.	145	Thomas Murphy.	Trackman.	25	"		Twin shaft.	Pittston borough.	Painfully burned on face and hands by gas while walking on the slope.
	7.	146	Fred. Adrian.	Miner.	58	Yes,	6		" "	Face painfully burned by gas in face of chamber.

TABLE V—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age	Married.	No. of children.	Name of colliery.	Location—County.	Nature and causes of accident.
Nov. 10.	147	Robert Seaman.	Miner.	48	Yes.	4	Columbian shaft.	Marcy township.	Jaw fractured by a premature blast.
10.	148	Martin Shields.	Trackman. . . .	25	No.	. .	Black Diamond shaft. . . .	Kingston township. . . .	These two men were laying track on the gangway, when some one went into a chamber which had been driven a short distance up and ignited a little standing gas which came down and burned them slightly.
10.	149	John Grady.	Laborer. . . .	27	Yes.	. .	" "	" " . . .	
11.	150	George Meredith. . . .	"	65	No.	. .	" "	" " . . .	Seriously injured by the gob falling on him in an entrance he was walling up.
14.	151	Frank Egruyer.	"	21	"	. .	Babylon shaft.	Marcy township.	Seriously injured by fall of roof.
15.	152	William Laskage. . . .	"	28	"	. .	Twin breaker.	Pittston borough. . . .	Painfully injured by a rail while putting car on the track.
17.	153	Joseph Supane.	Miner.	33	"	. .	Hallstead shaft.	Marcy township.	Seriously bruised on the hips by coal flying from a blast
18.	154	Frank Hanahoe.	Runner.	20	"	. .	Schooley shaft.	Exeter borough.	Hips squeezed between engine and cars.
21.	155	Patrick McGuire.	Laborer.	35	"	. .	Black Diamond shaft. . . .	Kingston township. . .	Leg fractured by a fall of checker coal.
26.	156	Dominick Shebaskie. . .	"	30	"	. .	East Boston shaft.	" " . . .	Hand badly crushed by coal falling on it.
26.	157	Wayman Fassett. . . .	"	39	Yes.	3	Prospect shaft.	Plains township.	Two ribs broken by a fall of coal.
Dec. 1.	158	Joseph Mesnertz. . . .	Miner.	52	"	3	East Boston shaft.	Kingston township. . .	Head cut by fall of bony coal.
2.	159	Jacob Shovro.	"	31	"	. .	Langcliffe shaft.	Avoca borough.	These two men were burned on face and hands by powder; the miner was filling a cartridge with his lamp on his head, a spark from the lamp flew into it, causing a half keg of powder to explode on them.
2.	160	Anthony Mercovich. . .	Laborer. . . .	30	"	2	" "	" " . . .	
3.	161	Winfield Scott.	"	. .	No.	. .	Shaft No. 4.	Jenkins township. . . .	Hands and back burned by an explosion of gas.
4.	162	John Meese.	"	38	Yes.	2	William A shaft.	Lackawanna township. .	Head painfully squeezed by being caught between carriage and side of shaft
5.	163	Mike Kutrowaski. . . .	"	21	No.	. .	Annora tunnel.	Laflin borough.	Arm broken by being caught between car and pillar.

6.	164	Robert Smith. . . .	Driver, ...	18	"	. .	Annora breaker.	Laflin borough.	Leg broken; while unhitching team of mules from cars he slipped and fell under them.
9.	165	John Timbrell, ...	Laborer. . . .	25	Yes,	. .	Black Diamond shaft. . . .	Kingston township. . .	Hip dislocated by fall of top coal while loading a car.
10.	166	Robert Burt, ...	Driver.	18	No.	. .	Avoca shaft.	Avoca borough.	Leg broken by being struck by runa way car.
11.	167	Thomas Neary.	Miner, ...	56	Yes.	4	Shaft No. 8.	Hughestown borough. . .	Leg painfully bruised by a piece of coal flying from a blast.
12.	168	Stanley Micca.	Laborer, ...	30	"	1	Annora tunnel.	Laflin borough.	Leg broken by fall of top coal and rock.
15.	169	John Brennen.	Water bailer. . .	45	"	2	Twin shaft, ...	Pittston borough. . . .	Three ribs broken by being struck by a car.
16.	170	William Slama.	Miner.	57	"	. .	Hallstead shaft, ...	Marcy township.	Painfully squeezed between a car and gob.
16.	171	John Dunning.	Driver.	17	No.	. .	" "	" "	Leg painfully bruised by a car knocking a prop out on him.
17.	172	Patrick Murrey. . . .	Miner.	45	Yes,	9	Prospect shaft.	Plains township.	Hands and neck painfully burned by gas.
18.	173	Archia Cosgrove. . . .	Laborer, ...	22	"	. .	Hoyt shaft.	Jenkins township. . . .	Back bruised by a fall of coal.
24.	174	David Williams. . . .	Miner.	68	"	8	Clear Spring shaft.	West Pittston borough. .	Leg broken by fall of rock while in the act of standing a prop.

THIRD ANTHRACITE DISTRICT.

(LUZERNE COUNTY.)

OFFICE OF INSPECTOR OF COAL MINES,
WILKES-BARRE, PA., *April 28, 1891.*

HON. THOMAS J. STEWART,
Secretary of Internal Affairs:

SIR: I have the honor herewith of presenting my annual report as inspector of mines for the Third anthracite district for the year 1890.

Beside the usual statistics it contains several articles on topics of interest to miners, and a full description of the disasters that occurred

The number of lives lost was 100, leaving 55 widows and 176 orphans.

Fifty-one of the above were lost in five disasters, which are fully described. All of the five disasters occurred from conditions which arose within a few hours of the time in which they happened, and not from conditions permitted to exist in violation of the law.

The number of serious not-fatal accidents was 208, being 6 less than in the previous year.

The production of coal was 6,907,708$\frac{3}{4}$ tons, being 422,414 tons less than the production of the year 1889.

The production of coal per life lost was 69,077 tons, a decrease of 35,850 tons from that of the year 1889.

The accidents to single persons, where only one or two is injured or killed at a time, were unusually small in number in the year 1890, and in most of these the injured person was responsible, but in all of the disasters that occurred, where four or more persons were killed at one time, mine officials were decidedly responsible, and were directly instrumental in producing them.

Four disasters, causing the loss of 46 lives, occurred in mines of the Lehigh and Wilkes-Barre Coal Company, and one in one of the collieries of the Susquehanna Coal Company, causing the loss of five lives. Each of these disasters are fully described in the report.

Yours very respectfully,
G. M. WILLIAMS,
Inspector of Mines.

TOTAL TONS OF COAL MINED DURING THE YEAR 1890.

Lehigh and Wilkes-Barre Coal Company,	1,697,805.85
Delaware and Hudson Canal Company,	942,104.55
Susquehanna Coal Company,	1,432,515.90
Kingston Coal Company,	789,113.45
Delaware, Lackawanna and Western Railroad Company,	302,640.30
Lehigh Valley Coal Company,	180,996.65
Red Ash Coal Company,	280,712.40
Alden Coal Company,	276,275.00
Plymouth Coal Company,	169,548.00
Hillman Vein Coal Company,	68,537.50
Hanover Coal Company,	131,910.85
Parrish Coal Company,	300,761.90
West End Coal Company,	167,747.90
Newport Coal Company,	99,313.00
A. J. Davis,	67,725.50
Total,	6,907,708.75

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

CAUSES OF ACCIDENTS.	Killed or fatally injured.	Seriously injured.
By explosions of carbureted hydrogen gas,	51	48
By falls of roof and coal,	15	60
By falling down shafts,	4	
Crushed and run over by mine cars,	8	46
By explosions of powder and blasts,	6	25
By miscellaneous causes under ground,	11	19
By miscellaneous causes on surface,	5	10
Total,	100	208

Number of Fatal Accidents and Tons of Coal Produced per Life Lost.

Names of Operators.	Number of lives lost.	Tons of coal produced per life lost.
Lehigh and Wilkes-Barre Coal Company,	61	27,832
Delaware and Hudson Canal Company,	5	188,421
Susquehanna Coal Company,	14	102,322
Kingston Coal Company,	7	112,730
Delaware, Lackawanna and Western R. R. Co.,	2	151,320
Lehigh Valley Coal Company,	1	180,996
Red Ash Coal Company,	1	280,712
Alden Coal Company,	1	276,275
Plymouth Coal Company,	5	33,909
Hillman Vein Coal Company,	No life lost.	
Hanover Coal Company,	1	131,910
Parrish Coal Company,	No life lost.	
West End Coal Company,	1	167,747
Newport Coal Company,	No life lost.	
A. J. Davis,	1	67,725
Total, all coal companies,	100	69,077

Number of Non-Fatal Accidents and Tons of Coal Produced per Person Seriously Injured.

Names of Operators.	Number of persons injured.	Tons of coal produced per person injured.
Lehigh and Wilkes-Barre Coal Company,	73	23,257
Delaware and Hudson Canal Company,	16	58,881
Susquehanna Coal Company,	52	27,548
Kingston Coal Company,	18	43,839
Delaware, Lackawanna and Western R. R. Co.,	9	33,626
Lehigh Valley Coal Company,	9	20,110
Red Ash Coal Company,	5	56,142
Alden Coal Company,	6	46,045
Plymouth Coal Company,	5	33,909
Hillman Vein Coal Company,	2	34,268
Hanover Coal Company,	2	65,955
Parrish Coal Company,	4	75,190
West End Coal Company,	2	83,873
Newport Coal Company,	3	33,104
A. J. Davis,	2	33,862
Total, all coal companies,	208	33,210

NUMBER OF SERIOUS NON-FATAL AND FATAL INJURIES AND TONS OF COAL PRODUCED PER EACH PERSON INJURED OR KILLED.

NAMES OF OPERATORS.	Number injured or killed.	Tons of coal produced per person injured or killed.
Lehigh and Wilkes-Barre Coal Company,	234	12,670
Delaware and Hudson Canal Company,	21	44,862
Susquehanna Coal Company,	66	21,704
Kingston Coal Company,	25	31,564
Delaware, Lackawanna and Western R. R. Co.	11	27,512
Lehigh Valley Coal Company,	10	18,099
Red Ash Coal Company,	6	46,785
Alden Coal Company,	7	39,467
Plymouth Coal Company,	10	16,955
Hillman Vein Coal Company,	2	34,268
Hanover Coal Company,	3	43,970
Parrish Coal Company,	4	75,190
West End Coal Company,	3	55,915
Newport Coal Company,	3	33,104
A. J. Davis,	3	22,575
Total of all coal companies,	308	22,427

In addition to the above number of serious non-fatal accidents, sixty-three were reported as very slight injuries and they were not included in the list of serious accidents. One fatal accident was also reported which was not properly a mining accident and it was not included in the list of fatal accidents.

The number of widows was fifty-five, leaving one hundred and seventy-six orphans, but several of those reported as orphans were full-grown sons or daughters.

CONDITION OF THE COLLIERIES AT THE END OF THE YEAR 1890.

By reference to Table A in this report, it can be seen that the aggregate quantity of air reported as being propelled into the mines of the Third district during the last week of December, 1890, was 6,168,406 cubic feet per minute, an increase of 496,928 cubic feet over the quantity reported for the same time in the year 1889.

The total number of persons employed underground was 12,579, being 540 persons less than were employed in the year 1889. On dividing the number of persons employed, into the quantity of air passing through the inlets, we find that 490 cubic feet per minute was propelled into the mines for each person working therein.

This is a very satisfactory showing of the condition of the ventilation in general, but there are localities in several of the mines that it is difficult to conduct the air current through in sufficient quantity, and in these places the ventilation is not satisfactory. The figures quoted, show that the ventilating capacity is ample at all the collieries, provided the air currents could be conducted through all the working places in desirable quantities, but owing to the peculiar situation of some parts of the workings of a few of the mines, and the lack of ingenuity on the

part of the foremen, the ventilation in these parts is not in all cases as good as we could wish it to be.

When the aggregate quantity of air in the inlets of a mine is ample, or if the capacity of the ventilating apparatus is sufficient to produce ample ventilation, it then becomes the duty of the mine foreman to distribute the currents and direct them in such a manner that the ventilation would be effective in all parts of the workings. In this, all the mine foremen have not been endowed with like qualities. A mine foreman who has never had charge of gaseous mines, does not take the particular care of the ventilation that one who has been trained in gaseous mines will do. The ingenuity and experience of the latter enables him to devise means by which the most intricate localities of a mine can be well ventilated. While the former, not having felt the necessity of ventilating such localities to the same extent, is apt to be content under the fallacious impression that it cannot be done.

In such cases only does the Inspector of this district find the ventilation insufficient, and only in such cases does he have to complain or interfere in order to secure efficient ventilation. As stated in former reports, the excavations or workings are becoming more extensive with every ton of coal extracted, and all the abandoned excavations, no matter how extensive they may be, have to be ventilated so that no dangerous bodies of gas, which may in some manner be ignited and cause a disastrous explosion, can accumulate.

If the writer is correctly informed, and he has no reason to doubt it, the old workings of all the mines are all free from danger from this source, but in order to keep the abandoned workings safe, they require continual care and careful watching. The workings are also extending to the lower points of the various basins, where more or thicker strata have to be sustained by the pillars and also by the friable bottom rocks of the various coal seams. In the deepest mines, the enormous weight of the overlying strata caused the bottom to heave in the hauling and ventilating passages, causing much annoyance and expense. This also adds to the difficulties of keeping the airways open for the purpose of keeping ample quantities of air in circulation.

In a number of the collieries the thinner seams are now being mined, and in most cases fire-damp is freely emitted, and unless extraordinary care is exercised by the officials and miners employed in these seams, frequent accidents may occur by slight explosions of fire-damp. If a small quantity of gas is ignited, a person has no room to evade contact with the flame, and is very liable to be burned more or less seriously.

Several of the mines had cave-ins during the year, which changed their aspect to a considerable extent. Such occurrences never leaves a mine in a better condition, but in most cases the conditions become much worse. The writer does not know of one instance that a cave-in did not increase the cost of mining, increase the danger and weaken the condition of the workings.

TABLE A—*Showing the quantity of Air Circulating through the Mines of the Third Anthracite District at the close of the year 1890.*

NAME OF MINE.	Name of operator.	Number of fans.	Number of persons employed in the mines per day.	Number of separate splits of air-currents.	Cubic feet of air per minute at the inlet.	Cubic feet of air per minute at the face of the workings.	Cubic feet of air per minute at the outlets.
1. Diamond,*	Lehigh and Wilkes-Barre Coal Company,	1					
2. Hollenbach,	" " "	2	108	6	367,565	120,935	376,307
3. Empire,	" " "	2	469	6	253,410	118,007	233,330
4. Stanton,	" " "	†3	54	7	106,800	172,560	262,300
5. South Wilkes-Barre,	" " "	†2	31	3	122,100	100,290	159,550
6. Jersey No. 8,	" " "	1	175	5	108,786	46,745	135,462
7. Sugar Notch No. 9,	" " "	3	197	10	296,000	217,000	307,300
8. Lance No. 11,	" " "	1	153	4	120,240	74,670	170,900
9. Nottingham No. 15,	" " "	2	636	10	194,285	186,990	196,780
10. Reynolds No. 16,	" " "	1	230	4	84,200	65,550	86,200
11. Wanamie No. 18,	" " "	1	98	4	81,700	52,200	105,900
12. Wanamie No. 19,	" " "	1	126	3	57,700	46,600	80,300
13. Baltimore slope,*	Delaware and Hudson Canal Company,	1					
14. Baltimore Shaft No. 2,	" " "	1	74	2	58,120	54,290	65,050
15. Baltimore Shaft No. 3,	" " "	1	90	2	65,500	35,280	73,580
16. Baltimore tunnel,	" " "	1	158	3	219,000	105,400	222,000
17. Conyngham,	" " "	2	60	8	163,811	137,390	179,960
18. No. 2 Plymouth,	" " "	1	20	1	21,200	21,000	21,200
19. No. 3 Plymouth,	" " "	1	168	4	68,725	61,790	68,750
20. No. 4 Plymouth,	" " "	1	98	2	36,360	26,770	36,180
21. No. 5 Plymouth,	" " "	2	186	6	113,000	110,500	115,600
22. Boston,	" " "	1	184	5	62,970	59,200	67,815
23. No. 1 slope,*	Susquehanna Coal Company,	1					
24. No. 2 slope,	" "	2	239	4	120,000	102,000	122,500
25. No. 3 slope,‡	" "	1					
26. No. 4 slope,	" "	2	132	5	202,933	88,140	201,570
27. No. 4 tunnel,	" "	1	18	1	16,200	11,600	16,840
28. No. 1 shaft,	" "	3	486	11	260,114	225,233	376,825
29. No. 2 shaft,	" "	3	413	9	480,890	143,711	187,548
30. No. 6 shaft,	" "	1	184	3	73,000	55,000	75,000
31. No. 6 slope,	" "	1	66	3	65,500	49,500	68,500
32. No. 6 tunnel,	" "	1	76	4	118,582	69,855	116,440
34. No. 1 shaft,	Kingston Coal Company,	2	268	4	102,142	89,721	115,614
35. No. 2 shaft,	" "	1	171	5	64,850	46,960	68,450
36. No. 3 shaft,	" "	1	119	5	78,840	60,100	87,440
37. No. 4 shaft,	" "	1	102	7	100,909	64,925	118,554

38. Gaylord shaft,	" "	1	228	7	240,800	159,500	234,600
39. Gaylord slope,							
40. Red Ash No. 1,	Red Ash Coal Company,	1	175	5	46,720	46,335	46,653
41. Red Ash No. 2,	" "	1	232	4	45,176	44,368	46,432
42. Avondale,	Delaware, Lackawanna and Western Railroad Co.,	†2	243	7	129,025	110,450	139,025
43. Woodward,	" " "	2	131	6	135,088	114,558	157,290
44. Dorrance,	Lehigh Valley Coal Company,	2	128	7	321,973	184,721	340,324
45. Franklin,	" "	3	193	8	131,282	125,402	133,201
46. Alden,	Alden Coal Company,	2	262	5	138,200	85,400	158,945
47. Dodson,	Plymouth Coal Company,	1	237	5	101,440	84,150	100,640
48. Hillman vein,	Hillman Vein Coal Company,	1	167	5	147,200	121,500	156,600
49. Maffet,	Hanover Coal Company,	2	172	4	144,000	43,000	105,000
50 Parrish,	Parrish Coal Company,	2	263	7	158,260	127,600	158,300
51. West End,	West End Coal Company,	3	185	5	143,220	74,970	171,515
52. Lee,	Newport Coal Company,		116	3	34,000	24,520	26,760
53. Warrior's Run,	A. J. Davis,	1	163	4	176,590	40,640	95,790
Totals,		77	8,484	238	6,168,406	4,207,024	6,590,820

There were 4,095 persons employed in main currents and not in any particular split of air, adding which make the total number employed equal 12,579.

* Exhausted air-currents not operated.

† One of the Stanton fans, one of the South Wilkes-Barre fans, one of the Avondale fans and one of the Conyngham fans are auxiliary machines used only when the others are not running. The work in the No. 4 tunnel, Susquehanna Coal Company, is robbing pillars, the mine being nearly exhausted.

‡ Workings all drawing pillars, air not reported.

EXAMINATION OF APPLICANTS FOR CERTIFICATES OF QUALIFICATION FOR THE POSITION OF MINE FOREMAN.

The annual examination of persons applying for certificates of qualification for mine foremen was held in this district at Wilkes-Barre, Pa., July 8th and 9th. The board of examiners were G. M. Williams, inspector of mines, W. A. Lathrop, superintendent of mines, and John Llewelyn, miner.

Thirty-four applicants appeared before the board of examiners, and the following-named persons passed a satisfactory examination and were recommended to have certificates:

Michael J. Brennan, ... Plymouth.
Essex Williams, ... Plymouth.
John E. Jones, ... Plymouth.
John J. Thomas, ... Glen Lyon.
Moses Jones, ... Glen Lyon.
Hugh Jones, ... Wilkes-Barre.
Edward Mates, ... Wilkes-Barre.
Hiram Smith, ... Wilkes-Barre.
Daniel Daniels, ... Nanticoke.
Henry Adams, ... Nanticoke.
Jacob A. Morgan, ... Nanticoke.
Thomas M. Jenkins, ... Edwardsdale.
Richard Rosser, ... Edwardsdale.

Two of the above persons were appointed to fill the position of mine foreman after having received their certificates, viz: Hugh Jones and Hiram Smith. Henry Adams was already an assistant superintendent under the Susquehanna Coal Company at Nanticoke,

COLLIERY IMPROVEMENTS DURING THE YEAR 1890.

The improvements during this year were chiefly confined to what was indispensably necessary to maintain the usual coal production. The collieries were in operation only an average of 176 days, and since the cost of keeping a colliery idle is high, there was not much encouragement in the business for improvements. Yet there were a few improvements made which are briefly described in the following remarks:

Lehigh and Wilkes-Barre Coal Company.

At the Empire colliery two short tunnels were driven from the bottom to the top split of the Red Ash seam. One was 72 feet long, and the other 180 feet. Each has a sectional area of 12 by 7 feet.

At the No. 9 colliery, Sugar Notch, a tunnel was driven from the Soss to the Twin and Shaft seams. It is 275 feet in length and 12 by 7 feet area.

At the Reynold's colliery a new slope was driven through the rock from the Ross seam to the surface. It is 240 feet in length and 84 square feet area, on a grade of 20 degrees. This is to take the place of the old slope and leads to a new breaker now in course of erection.

Delaware and Hudson Canal Company.

The new breaker at the Baltimore No. 2 shaft of this company was completed and began to prepare coal for the market in the month of November, 1890. This is a new colliery. The shaft is sunk from the surface to the Red Ash seam, a depth of 650 feet, and having a sectional area of 11 by 45½ feet. A compartment having an area of 11 by 12 feet is bratticed off for upcast, upon which a fan 20 feet diameter is erected. There are three cages, two for hoisting coal and one to hoist the workingmen. The coal is hoisted by a pair of engines 26″ by 48″ cylinders directly connected to a conic drum 6 and 10 feet diameters. The men will be hoisted by a pair of engines 18 by 36 inches, geared 4 to 1 to a parallel drum 9 feet diameter. The fan is operated by a pair of engines 14 by 24 inches.

At the No. 2 colliery, Plymouth, a new pair of hoisting engines were erected having cylinders 24 by 48 inches, directly connected to a parallel drum 8 feet diameter. A new fan was also erected to take the place of the old one. It is 17½ feet diameter, operated by an engine 14 by 36 inches. They also added ten feet to the length of the breaker-wings in order to enable them to lengthen the screens used to separate the different sizes of coal.

Susquehanna Coal Company.

At the No. 1 shaft an underground shaft was sunk from the Ross to the Red Ash seam, a depth of 180 feet. It is to be used to hoist the coal from the Red Ash to the Ross level. Its size is 12 by 21 feet. A space of this area was driven up a distance of 35 feet to give height to land the cages. The hoisting engines are located on the surface, from which the ropes pass down through bore-holes 950 feet deep and eight inches diameter. Another hole of the same diameter was sunk for the signal wires. The three holes are incased by a pipe 5⅝ inches diameter. This shaft will enable this company to work all the lower parts of the Red Ash seam in their property which could not be reached without incurring greater expense from their other openings.

In the Forge seam of the same shaft, the underground slope was extended to a depth of 1,150 feet. This slope has an area of 14 by 7 feet, and an average grade of 8½ degrees.

At the No. 2 shaft the underground slope was extended a distance of 600 feet, and the hoisting engine was placed on the surface. The bore-hole for the rope is 500 feet deep.

At the No. 2 slope the timber was removed from the underground engine house and replaced by walls of masonry. Now everything is in-

combustible and fire is not likely to occur. This was a desirable improvement, and has added much to the security of the property in that part of the mine.

Lehigh Valley Coal Company.

At the Franklin colliery a new breaker which had been in course of erection during the last year, has been completed and was started to prepare coal for market in June, 1890. It is located at a more convenient point to the slopes than the old one, and is a much better structure, being equipped with what is now considered the best machinery for preparing and cleaning the coal. The old one was abandoned, having given good service for a long period, but it was now in such a dilapidated state that it could not be further repaired.

The air shaft mentioned in my last report has been completed, having penetrated the Red Ash seam at a depth of 425 feet, and is now connected to make a second opening for the Rock Slope workings. A new fan, 20 feet in diameter, was also erected on this shaft which is furnishing a ventilation of 65,000 cubic feet of air per minute when running 50 revolutions per minute. This is considered ample for the present.

COLLIERIES DAMAGED BY A CYCLONE.

A terrible cyclone passed over the city of Wilkes-Barre, at about 5.45 p. m., August 19, 1890, and wrecked two hundred buildings and two coal breakers. Seventeen persons were killed or died in a short time from injuries received, and two hundred other persons were more less injured. The entire loss was estimated to be about half a million dollars.

Two breakers were in the path of the cyclone and were badly damaged, but, fortunately, although several persons were imperilled, all escaped without injury. The Hollenback breaker was struck and the tower over the shaft was driven fully six feet out of line. The roof was taken off the fan engine; all the breaker windows were broken, and the building was twisted out of place at several points. They had considerable trouble to bring the workmen up from the Red Ash seam as they had to be hoisted up the shaft as far as the Baltimore seam. The second opening to the former was not driven yet. And, notwithstanding they were in a perilous situation, they were brought out safely and without injury.

The Hillman Vein Colliery fared worse that the Hollenback. The tower supporting the sheaves or pulleys over the shaft was blown to the ground, leaving the cages fall down the shaft. The steam pipes of the fan were broken, causing the fan to stop, and, to make matters still worse, it happened that a fire was burning in one of the most gaseous gangways of the mine at the time. Although the fan had stopped, efforts were made to extinguish the fire until the danger became too

great and then it was abandoned. The men who were underground escaped through the second opening, and soon after an explosion occurred. In about six hours after the cyclone had passed, they had the steam pipes repaired and the fan running again. Soon afterwards the bosses and some workingmen descended into the mine and succeeded in extinguishing the fire before it had done much damage. They considered themselves exceedingly fortunate since the danger had been so great. No one was injured, although there were many narrow escapes. The colliery was idle for about seven weeks until the damage to the tower and breaker had been repaired.

The Cave-in at the Conyngham Colliery.

On the first day of January, 1890, the workings to the southwest of the No. 1 plane in this mine caved in and completely closed that portion of the mine. They were working the Baltimore seam from a small local basin right under the Lehigh Valley railroad shops; the pillars were fully as large as they were in other parts of the mine, but, notwithstading that, they began to crumble and yield under the weight, so that in a few days the workings collapsed. A large volume of fire-damp was released and filled the region of the cave; but the officials of the mine were looking for this and had provided for it.

That portion of the mine was not re-opened and, with the exception that provision was made to have the fire-damp removed, nothing has been done since.

The Cave-in at the Nottingham Colliery.

On the second day of January, 1890, a portion of the workings of the third and fourth lifts east of the underground slope in the Red Ash seam in this colliery caved in breaking clear up to the surface and causing the track of the Lackawanna and Bloomsburg railroad to sink about two feet below its former grade. An unfortunate feature of this cave was that it opened crevices under the sandy flats west of the Susquehanna river and admitted a large increase of water, which had to be pumped from the lower workings. It has also left a break in the strata, only a short distance from the river, which for all future time will be a weak point, inasmuch as the coal is being mined from under the river in the fifth and sixth lifts adjacent to these caved workings.

This colliery is the property of the Lehigh and Wilkes-Barre Coal Company, and it is the largest producing mine, from one opening, in the anthracite coal region. In the year 1874, when Mr. James B. Davies took charge of the mine, they were not able to produce more than 250 mine car loads per day, but he went to work and re-arranged the foot of the shaft and the tracks leading thereto; made gravity planes to run the coal down from the upper workings, and sunk an underground slope to mine the coal below the shaft level, and made it practicable to produce

1,800 car loads per day, at the bottom of the shaft, but the hoisting capacity of the shaft not exceeding an average of about 1,200, the production was limited to that number. It is indisputably the finest colliery in the region. They are working the Red Ash and Ross veins, the former 21 feet and the latter 7½ feet in thickness. The territory is large, and the veins are lying regularly, and are comparatively free from geological faults and from explosive gases. The workings are distributed so that it is easy to keep the shaft supplied with loaded cars under all circumstances. About 300 miners are employed in the mine who could produce an average of six cars each per day, but since the capacity of the shaft is limited to about 1,200 they are only producing about two-thirds of a full day's work each day, because they cannot be supplied with the required cars. Thus fully one-fourth of the miners could be dismissed without causing any loss or reduction in the quantity of coal produced. It is claimed that the excess of miners is needed in order to produce the required number of cars of coal when for any reason a number of miners are absent from work, or when a part or section of the mine is made nonproductive by an accident. An excess of two or three per cent. would be ample to make up the loss from absence, and accidents of the kind referred to should be rare occurrences if the management was of the proper kind. The extent of this cave-in was not large, affecting only the two gangways mentioned, and up to the present date they have not been fully re-opend. Had the energy, usually displayed in other cases, been applied in repairing this, the colliery could have been producing the usual quantity of coal in two or three weeks afterwards.

The pillars began to show the usual indications of the commencement of a squeeze early in September, 1890, in breasts where the top coal had been mined, but although the attention of the officials was called to that frequently, no efforts were made to check its progress, until it had reached a point where efforts to that effect would be useless. Its progress was finally arrested, only when the overlying rocks were broken by large reserve pillars previously left for the purpose of preventing caves-in from taking place. Provisions were made just prior to this trouble to work the large reserve pillars, but, fortunately for the owners, the squeeze commenced while pillars were still in existence to arrest and stay its progress.

Explosive gases appeared in the air at a number of points immediately after the caving took place, and on January 4 the mine foreman and district superintendent, while making examination together, fired it with their naked lights in one of the breasts in the fourth lift. Fortunately neither was seriously hurt, and nothing else was set on fire.

A Second Cave at the Nottingham Colliery.

On the afternoon of January 24 another large cave-in took place in a remote part of this mine in the workings of the No. 6 plane. This was a long distance way from the cave-in described in the preceding article,

and it appears to have occurred wholly unexpectedly, in falling; it drove the air away with such force that it was felt at the bottom of the shaft, a mile and a quarter away from the seat of the cave. The coal in this part of the mine was nearly exhausted, and only a few persons were employed there, chiefly in robbing pillars or drawing back the gangways. The pillars adjacent to this cave continued to crumble, so that the squeeze spread and extended over a very large area of workings. On February 1 a body of firedamp was ignited from the naked lamp of one of the fire-bosses, causing a terrific explosion, killing eight men and injuring several others. (See article on Disasters.) The squeeze continued to spread until March 7th, when the rocks broke and the whole region caved-in, covering an area of about 1,600 feet square.

Cave-in in the Jersey No. 8 Colliery.

At 9 o'clock a. m., May 15, the workings of the first, second, third and fourth lifts west of the main slope in this mine suddenly and unexpectedly caved-in. In each of these lifts the Baltimore seam was mined in two splits, separated by about 15 feet of rock. The workings of the second, third and fourth lifts were nearly exhausted. There being only three parties working in the fourth, and one in the third lifts, but a large number of miners were employed in each of the splits in the first lift. At 9 o'clock word was sent into the mine that work was suspended for want of railroad cars, and at the same time the workings described above caved and cut off the escape of the persons employed in the top split in the first lift. (See description of accidents.) The bottom split gangway was not closed, and if the persons inclosed in the top split had gone down through the airway at the face to the bottom split gangway before the fire-damp had accumulated they could have walked out, but this opportunity was lost, and through a fatal mistake of an official the fire-damp was ignited, and all the men, except two, were killed. It is claimed by the officials of this company that this cave-in came so suddenly that no time was given to warn the workmen of their peril, and this is undoubtedly true as to its effects in the vicinity of the gangways where the workmen were employed, but it is not probable that a cave-in of such a large extent as this was, occurred without first crushing the pillars around the point where the squeeze originated for a considerable time. The origin of all caves-in is a squeeze on one or more pillars at a weak point in such pillars, and from thence it spreads, crushing every pillar in its path, until a point of sufficient strength to stay it and break the overlying rock is encountered, then the whole of the crushed region caves-in. During the few hours just prior to the collapse, it generally spreads very rapidly, because the weight, having become so great, causes the pillars to give way quickly. Undoubtedly it did so in this case, when it spread over the gangway in which the workmen were closed in at the Jersey colliery. The fire-bosses at this mine were all strangers, having

had no time to become familiar with its extensive old workings, and most probably those of the three lower lifts had not been as thoroughly examined as the case required, or the existence of the squeeze would most probably have been discovered in time to avert the dire calamity which followed.

This cave-in caused a large flow of water into the mine, which accumulated at the bottom of the slope. A large volume of fire-damp was also liberated, causing the air in the west workings to become explosive. The colliery was thrown idle for over three months.

A CAVE-IN IN THE STANTON COLLIERY.

On Saturday, August 30, one of the fire-bosses noticed some of the pillars chipping and cracking in the breasts east of the No. 5 plane in this mine, and at once notified the officials. From this on to September 6 efforts were made to stay the progress of the squeeze, but with no apparent effect. At this date the enormous volume of explosive gases released made it too dangerous for men to be in the mine, and all, except the foreman and fire-bosses, were withdrawn. They watched its progress until it finally abated and settled, after spreading over a large area of the workings. Although this mine is one of the most dangerous in the region, this period of extreme peril passed without an accident. The gangways are now re-opened, and the mine is in a safe, workable condition.

FATAL MINE ACCIDENTS AND MINE MANAGERS.

Before entering upon a detailed description of the disasters which occurred in this district during the year 1890, it is necessary to explain the relation of mine-foremen and superintendents to the mines, and the part they take in causing or preventing accidents. Whenever a disaster occurs in a coal mine, the public is inclined to believe that the mines, in general, are badly managed, and that the officers have no regard for the safety of the workmen, and that the causes which result in disaster have always existed, needing only a slight mistake, or a heedless act, on the part of one of the employes to cause it. This is wrong and unjust. The conditions which make a disaster even possible are seldom known to exist before the moment it takes place, and, in most cases, the existence of danger has not even been suspected. Five disasters occurred in mines of this district in 1890, and in only one was it known that danger existed before the occurrence of the disaster, and it occurred in that one while efforts were being made to remove the cause of danger. It was the one at No. 4 slope, Nanticoke. With the exception of the case at the Hollenback and Jersey collieries, it is not probable that any unusual danger existed which could have been discovered twenty-four hours before the time at which the disasters occurred.

Superintendents and mine-foremen are generally exceedingly careful, but they have hundreds of points to watch, and must trust a large share

of that work to assistants. With the exercise of the greatest precautionary care, conditions which make disasters possible arise suddenly and unexpectedly in gaseous mines, now and then, but happily in most cases the dangers are removed without accidents. No man, who has never had any experience in a gaseous mine, should be placed in charge, nor be placed as an assistant in charge, of such a mine. I regret to state that I believe that if the mine-foremen and assistant mine-foremen in positions in this district in 1890 all had the experience required to enable them to forsee, what every experienced man ought to see, some of the disasters mentioned could have been easily averted. The operator or superintendent who engages a mine-foreman or an assistant mine-foreman, who has not had the necessary experience, is guilty of gross indifference as to the effect on the safety of the workmen; he places no value on their lives and jeopardizes the safety of his or his employer's property.

In the following pages of this report I shall endeavor to describe each of the disasters referred to and explain the circumstances which caused them.

Disaster at the Nottingham; at the No. 3 South Wilkes-Barre; at the Jersey No. 8, and at the Hollenback of the Lehigh and Wilkes-Barre Coal Company.

Prior to the year 1890 the Lehigh and Wilkes-Barre Coal Company's record of accidents has been a very creditable one, comparing favorably with the best of other coal companies. Notwithstanding that several of their collieries were until about two years ago extremely dangerous owing to the large quantities of gas issuing. The number of accidents were comparatively few, remarkably so, when we consider the dangerous condition of the mines. But in the year 189 0, though the difficulties were not nearly as great as they had been in the previous year, no less than sixty-one persons were either killed or fatally injured in the collieries of this company. Of this number forty-six were lost in four separate mishaps which occurred in the collieries named at the head of this article.

In order to explain the circumstances which led to such direful results, it is necessary to note the radical and unprecedented changes made in the managing organization of the collieries, and the effect of such changes on the condition of the mines, and on the conduct of the employes. This company operates ten collieries in this district, and prior to the year 1889 each colliery was under the charge of men who had been in the employ of the company in various capacities for many years and had extensive experience of a kind that could not be gained in any other locality, and which was of peculiar value in this region.

On the first day of April, 1889, the inside superintendent resigned his position leaving the collieries all in excellent condition. His successor was engaged from another region of entirely different character, and he

at once fell into the pernicious custom of a few designing new mine officials of reducing the cost of mining in order to show a contrast between their management and that of the preceding one with the view presumably of creating a temporary favorable impression on the company. This custom of new mine officials is a bad one, which generally leads into trouble and additional cost in the end. The excellent condition of the colleries of this company permitted this to be exercised to a greater degree than it could have been if the colleries had not been in good condition, and it was done extensively, regardless of all consequences. Old men, who had been employed to keep the main gangway clean, were peremptorily discharged; the mem employed to unload rock and other refuse in old breasts for the purpose of supporting the pillars were dispensed with, as if their work was useless; door-tenders were suspended as superfluous laborers; two hours and half of time was added to each working day of the fire-bosses, compelling them to stay in the mine from about 2 o'clock a. m. until half past three p. m., causing a bitter, resentful feeling, and a spirit of indifference among the most important class of employes; the examination of the abandoned workings was looked upon as unnecessary labor, and it was neglected until the inspector interfered; the measuring of the air currents was neglected, and false statements reported to the inspector; the mechanics were suspended and the mine-foremen were expected to devote much of their time to attending to pumps and other machinery, and neglect their most important duties; thus a mean, niggardly policy was generally introduced to save expenses for the time being, regardless of all propriety, and regardless of the provisions of the law, and of the safety of the property, as well as of the employes. The result was that the officials, refusing to bear the odious responsibility attending such a reckless and indiscreet policy, resigned their positions one after another until the organization was completely changed and demoralized.

Beside the general inside superintendent the following number of mine officials resigned their positions in course of a few months. The general outside superintendent, the chief mining engineers, one master mechanic, nine mine foreman and ten assistant mine foremen. These were all men of experience, some of whom had served the company for twenty-five years and compared favorably with the best mine officials of this region, but all were succeeded by strangers to this region, who knew nothing of its peculiarities, and who had no experience whatever with mines of the character of this company. Considerable bad feeling was engendered by these proceedings, and seeing that old employes of the company were treated with disfavor and that all promotions were made from the men of other regions, a large number of the best and most experienced workmen left the company's service and sought work elsewhere. Methods of mining which had been condemned years ago, were re-introduced, such as driving single gangways and conducting air-currents through pipes

etc., which are generally looked upon as a dangerous method which jeopardizes the safety of a gaseous mine to an unwarrantable extent.

Whenever the provisions of the mine law were disregarded, the mine inspector interfered and demanded compliance with them, but he endeavored to do so in a courteous and inoffensive manner, yet although the law made it his duty to see that their provisions were complied with, he felt that his efforts in that direction were regarded as an intrusion and he did not receive the respectful treatment usually received from the officials of the companies of this district. However the provisions of the law had to be complied with in all matters pertaining to the condition of the mines, in all the cases that came under his notice, but the law is not, and cannot be effective in preventing men from committing grave blunders in cases of unexpected emergency, whether such men are competent or not. In all the disasters of 1890 in this district grave errors were committed, and in each case the errors were committed by officials who did not exercise the care and precaution which might have been reasonably expected if they had the necessary experience. The evident want of experience on the part of the officials of this company caused many to predict trouble, and although we are satisfied that the disasters were the natural sequences of their conduct in general, it would have required a greater power than is bestowed on man to foresee and prevent them by any system of inspection.

DISASTER AT THE NOTTINGHAM COLLIERY.

About 9 o'clock a. m., on the first day of February, when James Dunston, a fire-boss, was walking up through a passage-way leading from the No. 5 plane workings to the next gangway above which was driven from No. 2 plane, he unexpectedly entered a body of fire-damp with his naked light and caused a terrible explosion in which he was fatally burned, seven other persons were killed and several others, more or less injured. Reference to the accompanying sketch of that portion of the workings may assist the reader to understand the situation. All the workings west of the seat of the explosion were squeezing and showing positive evidence of an approaching cave. A gang of men consisting of David Fox, Joseph Jones, David J. Williams, John E. Davies, Edwin Parry, Paul Schultz, John Crossing and John Dennis were at work timbering on the No. 2 plane west gangway at the point marked D on the sketch. Another party of men consisting of John D. Humphreys, Thomas Lake, John J. Thomas, Peter Lynn and David Garland were engaged at similar work at the head of No. 5 plane, the point A of the sketch. Mr. Dunston visited the latter party at about 9 o'clock, and after giving directions regarding the work, he left to go up to the other party on the No. 2 plane gangway. When on his way up through the passage, B on sketch, and on reaching the point B, he noticed an enlargement of the flame of his lamp and instantly the whole surrounding atmosphere

burst into a fierce rolling flame. It left him in a poisoned atmosphere of after-damp severely burned and in eight days thereafter he died. He himself gave the account of the occurrence as stated above. The force of the explosion was such that every movable thing was blown from its place for hundreds of feet from the point where it occurred. Five of the gang of men working at D, on the No 2, plane gangway were instantly killed and the other three were severely injured, and one of the three died in a short time after being taken home. All the gang at the head of No. 5 plane were more or less injured; John D. Humphreys was fatally hurt and died an hour afterwards.

The writer was informed of the accident at midday and immediately started for the scene and arrived there at about 2 o'clock. There were hundreds of excited people at the shaft waiting anxiously for tidings from the mine. Five men were still missing. After descending the shaft, I found the mine foreman sitting in the fire-boss station, evidently afraid to go in to the scene of the disaster which was fully a mile and a quarter away. After making a few hurried inquiries I went up the No. 2 plane and on to the scene of the explosion, where I found Mr. Leckie, the district superintendent, the fire-bosses and Mr. Iago Jones, the mine-foreman of the Lance colliery, and several workmen busily engaged in searching for the bodies of the missing five men. The gangway road for a distance of about three hundred feet was covered with rock and out to a depth of from two to three feet. All the air stoppings had been blown away leaving the air-currents to make short circuits, and leaving an extensive area of workings unventilated. Work was continued until shortly before 8 o'clock p. m., before finding any bodies. Then the bodies of John Crossing, Paul Schultz and Edwin Parry were found under a large mass of *débris* at D. Having been covered up instantly at the place where they were at work. After clearing the largest part of the gangway, search was made in the airway, and at 10 o'clock the bodies of David H. Williams and John H. Davis were found lying on their faces at C, in the airway. If the mine-foreman had done his duty, and had gone in to help in the search, the last two bodies could have been found hours sooner. It was not known by the rescuers that the missing men were working in the airway until about 9.30 o'clock when one of the workmen stated that one of the injured men had told him so. Then search was immediately made and the bodies were found at C, shortly after.

Mr. Dunstan, who fired the gas, was an old fire-boss at this mine, but had been employed chiefly in that part of the mine where no fire-damp had been seen. He had been in the workings of the Ross seam on this morning before going to the men at the head of the No. 5 plane, and was evidently going to give directions regarding the timbering. No examination of the workings, intervening between the squeeze and the points where the men were at work, was made. The mine-foreman had not yet

SKETCH OF MINE WORKINGS

IN NOTTINGHAM COLLIERY

SHOWING CHAMBERS IN WHICH

EXPLOSION OF GAS OCCURRED

FEB.1 1890

MADE FOR C M WILLIAMS' REPORT

become familiar with that part of the mine, and evidently engaged the fire-boss to do the foreman's duty of directing the repair work, and so omitted his own important duty of making proper frequent examinations of the airways in the vicinity of the squeeze. It was known that a squeeze had been in progress for over a week, but no precaution was taken to ascertain its effect upon the air-currents returning from that section. It is claimed that no gas was ever seen in this part of the mine before, as an excuse for the neglect to make proper examinations at this time. On January 4, in the vicinity of a squeeze, in another part of the mine, where it was also believed that no fire-damp issued, the mine-foreman and district superintendent together, while making examination, ignited a body of gas and both were more or less hurt. Again, on the night of January 6, Thomas Richards, a workman, was burned by an explosion of gas in the vicinity of the same squeeze.

On January 24 a cave-in took place on the No. 6 plane, west of the point where Dunston fired the gas, the concussion of air from which was forcibly felt at the bottom of the shaft. An examination was attempted to ascertain the location of this cave-in, but the pillars were crushing so that it was not safe to approach nearer than the foot of No. 6 plane, a thousand feet or more back from the face. Now, with the experience they had with the other cave-in a few weeks before, and the knowledge of this squeeze and its recent cave-in, it was fair and reasonable to expect that a careful watch would be kept of the effects on the air-currents of a squeeze of such a large extent as this for fear they again might become explosive from the presence of fire-damp. The inspector visited the mine on the 7th, and again on the 27th of January, and saw that none but safety-lamps sh ould be used in the vicinity of the cave of January 2, but although the mine-foreman accompanied him in the inspection of the work of that part of the mine, he said nothing about the trouble on the No. 6 plane, and yet he knew that an extensive squeeze was in progress there. But it has been brought to light since that he did not visit the region of that squeeze during all the time that it was in progress except once. The superintendents went up there nearly every day to examine the squeeze and to listen to its progress, but they went there with naked lights, and took no precaution to ascertain whether there was fire-damp present or not. On Monday morning, February 3, the second day after the disaster, the writer accompanied the superintendents in an examination of the No. 5 plane gangway, and we found the workings filled with explosive gases back to a point 500 feet from the face, proving that an enormous volume of gas was released from the strata or pillars during the squeezing and crushing of the pillars. The air-current from this region was passing the point where Mr. Dunstan fired the gas, and evidently a section of this current having been charged with gas to an explosive mixture reached that point just when he was approaching with his exposed light, and consequently the explosion

followed. The concussion of this explosion killed and injured the workmen at the points mentioned, and did the other damage. The colliery had not been in operation since the other cave-in on January 2, and only repair-men were in the mine when the explosion occurred.

It has been well known here for several years that when a squeeze or a cave-in occurs fire-damp is also liable to appear in the air in sufficient quantities to make it explosive, and every man who assumes charge of a mine should know this, and exercise the necessary precaution when such trouble comes upon him, but in this instance every official, from the superintendent down, seemed to be ignorant of this fact, and acted in conformity with their experience in other very different regions.

DISASTER AT THE NO. 3 SHAFT SOUTH WILKES-BARRE.

A map of the workings of this mine is here presented in this report which shows the workings and their connections with the Stanton mine. To enable the reader to understand the situation, the conditions just prior to the accident is explained. The No. 3 shaft was the hoisting way for both coal and men. This shaft was also the inlet for the ventilation. The air-current after descending this shaft, passed in through the tunnel and in the gangway to the point "P" where it was split, a part going up the outlets and down the rock plane to the Stanton fan, and the other split passing into the face of the gangway and returning through the air-way as indicated by the arrows, to the fan at the No. 5 shaft. This shaft also had a cage in to hoist the coal worked from the Baltimore seam 300 feet deeper than the Hillman, which was worked from the No. 3 shaft. Thus it may be seen that there were three available openings for No. 3 shaft working; one leading down the rock plane into the Stanton mine; one in the No. 3 shaft; and one in the No. 5 shaft. It was a gaseous mine and exceedingly so at some points. The rock plane was driven from the Baltimore seam in the Stanton mine on a rise of 18 degrees for the purpose of working the Hillman seam above the level of the point "B" on map, but it proved so gaseous that it was found impossible to conduct sufficient air up through one opening, and to avoid driving another passage through the rock from the Stanton, connection was made to No. 3 working of South Wilkes-Barre, undoubtly a costly error. On February 2, after making this connection, the inspectors had to notify the company to suspend operation in both the Stanton and South Wilkes-Barre mines, because in consequence of the opposite effects of the ventilating fans of South Wilkes-Barre and Stanton mines. The air-currents became unreliable and fluctuated so that they became explosive at frequent intervals making both mines dangerous. In a few days this was remedied so that a reliable system of ventilation was established in the manner indicated on the accompaning map.

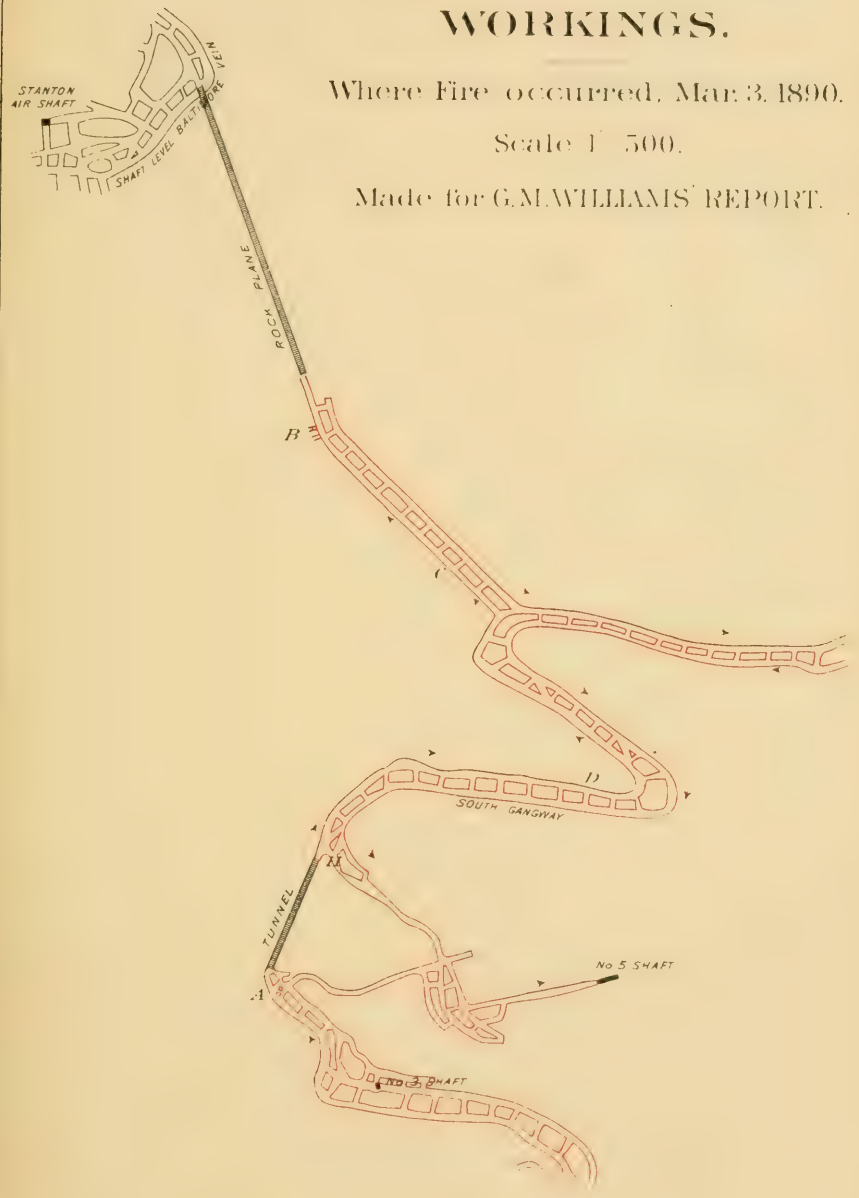
On the third day of March, a party of men consisting of Frank Cull, Hugh Dugan, Thomas Williamson, James O'Donnell, Michal Ferry and

MAP OF
SOUTH WILKES-BARRE
WORKINGS.

Where Fire occurred, Mar. 3, 1890.

Scale 1" 500.

Made for G.M. WILLIAMS' REPORT.



Patrick McNealus was started to work in driving a gangway and air-way at the point B near the head of the rock plane leading down to the Stanton mine. Shortly before 5 o'clock p. m., Frank Connell, William Evans and Brien Markey were repairing the track at C on the passage driven up to connect with the rock plane when the foreman, Richard Faull, passed them on his way out from Cull and his party.

At the same time Thomas Hall and James W. Jameson footman and driver, were going out towards the No. 3 shaft with a trip of cars, and when at the point A, a short distance outside of the tunnel, Jameson stumbled and fell with his head against the rib where a large gas blower was issuing from the coal, and this ignited from his lamp and caused several other blowers to ignite. Mr. Faull was coming outwards on the gangway and smelled something burning in the air-current. Hurrying out, he found the two boys about to try to extinguish the burning blower with a patent fire-estinguisher which they had procured from the bottom of the shaft. The place was thickly timbered and a current of 80,000 cubic feet of air per minute was passing inward and conveying the smoke into the workmen. The patent extinguisher proved usless, and under the circumstances it was only a waste of valuable time to try it. Mr. Faull sent young Jameson in to warn the men and tell them to come out, and immediately went to work to attach hose to the water pipe already convenient, so that a stream of water could be poured on the fire. The night men descended the shaft at this time and joined in to help, but despite their efforts the fire continually gained.

Young Jameson ran in and told George Ford and James Haslam, who were working in the airway, of the fire, and they went out through the No. 5 shaft. Then he ran by Frank Connell and his two companions at C telling them as he went by on his way up to tell Cull and his men.

Frank Connell started out at once to help put the fire out, leaving Evans and Markey to pick up the tools and put them away. The following statement of William Evans explains what occurred:

"My work is carpenter work. I was fixing the track at the time, was down on my knees when the boy James W. Jameson came in and told Frank Connell, who was with me, that he should hurry out to help put out a fire which was just the other side of the tunnel. Frank went out for all he was worth, and then the old man, Brian Markey, followed him, and then I put the tools to one side after they went. We had been taking out some broken wooden rails and replacing them with new ones. The boy, Jameson, went up to notify Cull and the others who were with him to come right out. I was at the bottom of the branch of the plane (at P) when the boy came back. Tom O'Donnell was with me all this time. O'Donnell was the runner. The boy, Jameson, asked O'Donnell whether they could ride out on the mules. O'Donnell said no, let us hurry up and get the mules. The mules were right on the right hand hole (there were two holes, one on the right and the other on the left)

about forty feet away from where we were. Then I told them to hurry up and get out for the smoke was coming pretty fast. So then I hurried out. I came all the way with my head nearly touching the rail, the smoke being heavier (denser) above than it was below. I caught up to Brian Markey before he reached the fire. He was nearly out of breath. Before he came to the fire he asked me whether he would make it (meaning whether we would get out alive) I said yes, that we would be all right soon. We went right through the fire. I put my coat right over my head. Brian was ahead of me. After I got through I helped the men fight the fire. There was plenty of chance for the men to get out, and I don't know why they didn't take the warning and hurry out. They had the same opportunity to get out that I had." "The above is a true account of the circumstances to the best of my knowledge and belief."

Evans was the last person that came out alive. Messengers were sent over to the Stanton mine to see whether or not the Cull party had escaped that way, but they had not, and the smoke was so dense in that direction that it would be impossible for any one to live in it but a very short time.

The efforts to extinguish the fire were continued until about half-past seven o'clock, when it became too dangerous by reason of the presence of a large accumulation of fire-damp in close proximity to the fire, where it might explode and kill them all. Before this Mr. Scott, the superintendent, Mr. Richards, the mining engineer, Mr. R. Morgans, district superintendent, William M. Thomas, mine foreman of the Stanton, John James, assistant foreman, and Charles Jasper, mine foreman of the Empire, had reached the mine, and for a short while assisted in the endeavor to extinguish the fire. At the time stated their efforts were abandoned, and all left the mine expecting an explosion to occur at any moment.

The writer learned of the accident at 7 o'clock p m., and arrived at the mine at a few moments after 8. On being informed of the situation, and after a careful consideration of the circumstances, it was suggested that an effort be made to enter the mine beyond the fire from the Stanton mine, hoping that thereby the bodies of the missing could be found. The writer realized that this undertaking would be a perilous one, attended with many difficulties, but he knew the district superintendent, the mine foreman and fire bosses of the Stanton mine as men of experience, who could be relied on to make no mistakes, and he, with the approval and co-operation of the managers, resolved to make the attempt.

In order to accomplish what was desired it was necessary to change and reverse the direction of the air current leading to the Stanton, so that the smoke would be driven back towards the South Wilkes-Barre fan, therefore the South Wilkes-Barre fan was run up to a speed of 200 revolutions per minute. District Superintendent Morgan R. Morgans,

Mine Foreman William M. Thomas, and his assistants, John W. Joseph, John R. James and William T. Evans, had descended the mine and were at the bottom of the rock plane ready to make required changes in the airway. The writer and Superintendent T. H. Phillips were in communication with them by telephone from the top of the air shaft, and also with South Wilkes-Barre. Men were stationed at the telephone, and men were employed watching and lubricating the South Wilkes-Barre fan, who were all instructed to be on the alert, ready to give alarm promptly in case the fan failed to keep up the high speed. The Stanton fan was stopped until the party in the mine had pulled down a stopping and put up another, when instantly the air current reversed its course and carried the smoke away towards South Wilkes-Barre. Immediately after receiving word that the changes were completed, the Stanton fan was set to running again at 25 revolutions, half its usual speed, so as to keep the Stanton workings clear of gas. In the meantime the inside party hurried out of the mine for fear that the reversed air-current should cause the fire to ignite the large body of fire-damp known to have accumulated on the South Wilkes-Barre side and produce an explosion.

A party of trusty men was now organized consisting of the following persons: G. M. Williams, mine inspector; M. R. Morgans, district superintendent; William M. Thomas, mine foreman of the Stanton Colliery. John W. Joseph, assistant mine foreman; John R. James and Willlam T. Evans, fire-bosses; Charles Jasper, mine foreman of the Empire Colliery. John Leyshore, Frank P. Thomas, James Berrigan, John J. Thomas, Sheridan Hilton, William Walker, John C. Thomas and William H. Phillips, employes of the Stanton Colliery. All descended the shaft and went to the foot of Rock plane. This plane is nine hundred feet long on a rise of twelve degrees, all driven through rock. Upon receiving assurance from Superintendent Phillips, who was still at the tele phone on the top of the Stanton air-shaft that all was right, a man was left at the telephone in the mine at T, and one within hailing distance on the way from there on and up the plane All had locked safety lamps. At the head of the plane, the intense heat of the air-currents had caused the roof to fall so as to close the passage. It took about an hour to open a small passage sufficient to enable one to crawl through. At this time Superintendent George Scott came in, having been attending to matters at South Wilkes-Barre. The writer suggested to him that it would be well to make preparations for flooding the mine as quickly as possible, so as to prevent the fire from passing over to the Stanton mine, and he went at once to inform Superintendent Phillips to that effect by telephone. Shortly after, a passage was made through the fall and the officials named passed through and down the South Wilkes-Barre gangway as far as P. Its parallel airway was also examined to the same point, but none of the missing men were found. It was too hot to at-

tempt further examination all retreated to the Stanton gangway, and after a brief consultation decided to rest a few hours, to give the heated passages time to cool, and that all should return with additional force at 9 o'clock. It was now 5.30 a. m. At the time agreed, the party returned with the following persons in addition: District Superintendent L. W. Sarge, Joseph Ford, mine foreman of Hollenback Colliery: Joseph Nesbit, R. J. Williams, Wat. Jones, Thomas D. Rowland, Thomas Malia, James W. Davies, Ed. Williams, J. S. Griffiths and David C. Morgan. This time the workings of South Wilkes-Barre were thoroughly examined from the face back to D, to which point the fire had traveled and was seen burning fiercely.

This satisfied us that the missing men had fallen suffocated by the smoke at some point between this and the tunnel, and that the fire had traveled inwards to a point 1,200 feet inside of where it started.

Superintendent Phillips did excellent work in procuring water, and had the mine flooded by March 12, so that water was running over to the Stanton, but it was boiling hot for several days.

On Monday, March 24, they began to hoist the water out again, and by April 1, it was low enough to enable District Superintendent M. R. Morgans and Mine Foreman Richard Faull to descend the No. 3 shaft for examination. They found the gangway completely closed to within 150 feet of the shaft. On the 4th of April again a party of officials examined all that could be examined, and came to the conclusion that the fire was extinguished. They went down the No. 5 shaft and in as far as H, on top of the falls, and found everything cool, but the roof had fallen to a height of about 24 feet and from there it was full of gas.

A gang of men was set to work that night to re-open the gangway from the No. 3 shaft, using locked safety lamps, but at 2 o'clock a. m. an explosion occurred somewhere inside, and blew them about quite roughly, but they came out safe, and without injury of any consequence.

On Monday morning April 7, when the officials were on their way into the Stanton mine for the purpose of making another examination, another powerful explosion occurred which determined that fire still existed and South Wilkes-Barre was filled with water the second time. This time it was allowed to remain filled with water until May 28, and after it was taken out, no attempt was made to ventilate farther than the point where the men were at work. The rock plane leading into the Stanton was hermetically sealed so that no air could pass.

They worked incessantly night and day without finding any trace of the missing men until the last night of the year, December 31, when the bones of two were found. The next day, January 1, 1891, the bones of the other six were found. All were near together at the point H. They had evidently attempted to go to the return airway at this point and were suffocated by the smoke when between the two doors. The roof had falled to a depth of twenty-two feet over them. The flesh had dis-

appeared leaving nothing but the bones. Frank Cull had lost one leg and this enabled them to identify his bones; but the others could not be identified and all were interred together.

The men who made the daring attempt to rescue the missing men are entitled to the highest commendation for their intrepid courage and humane efforts to save their fellow workmen. The officials of the Stanton mine and District Superintendent M. R. Morgans, without apparent hesitation, took the most perilous position. They knew that under ordinary circumstances this part of the mine would fill with gas in five minutes were the ventilation to cease, and that, if the South Wilkes-Barre fan, being a new one tried for the first time and at such high speed, would break or be retarded in motion, the smoke would be drawn upon them instantly by the Stanton fan. They also knew that if the double doors at H would burn down, the air fan No. 3 would take a short circuit that way to the No. 5 shaft; but, trusting that the tunnel would choke by falls so as to prevent this, all did their part bravely and well without betraying any hesitation.

The Disaster at the New Jersey or No. 8 Colliery, Ashley.

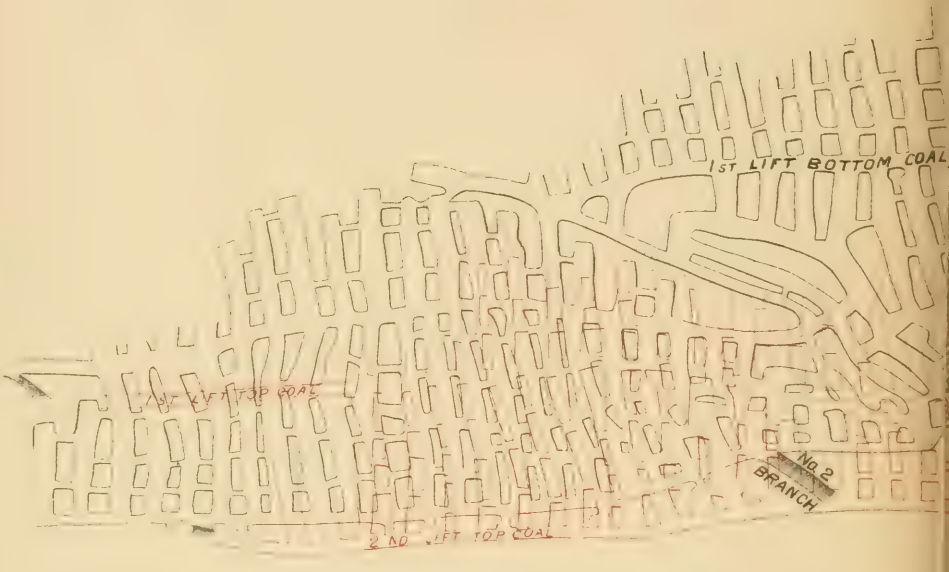
At about 9 o'clock a. m. on the 15th day of May, 1890, an extensive part of the workings of this colliery unexpectedly caved in, closing the usual escape-way of twenty-eight persons and closing them in at the inner part of the first lift west, on the top split of the Baltimore seam, at B in the accompanying sketch.

It was reported to the workmen before they entered the mine that their working places had been examined and found safe. Shortly before 9 o'clock a. m., a message was sent in to tell the employes that the colliery would stop working at 9 o'clock, owing to the scarcity of railroad cars. At about this time also the cave-in took place, closing in not only all the men that happened to be working in the top split, but four others also who were working in the bottom split. The four persons from the bottom split were at their work shortly before the occurrence of the cave-in and the cause and manner of their going to the top split remains a profound mystery. The bottom split gangway did not cave and is still open. The rock passage leading from one split to the other at C was not closed and is still open. At first it was thought fortunate that John Allen, one of the fire bosses, was with the party, because he knew that an opening could be made from the surface at A and to one of the breasts inside of the cave in a short time, and that this would allay their fears and anxiety and guide them in their conduct; but he, through a thoughtless act, caused the death of all but two, twenty-five of his companions and himself.

The driver, Willie Matthews, and Thomas Lloyd, a door-boy, were the last that came out of the top split before the cave-in. They stated that a few minutes before they left, while they were at the back branch (B on

map) getting ready to distribute cars, John Williams came to Matthews and told him not to go in the gangway, that the roof was bad. In five or ten minutes after that the boys started out, and when they had gone a distance of about three hundred yards, the cave-in occurred and extinguished their light. From this we know that there were indications of the cave-in for a short time before it took place, but it is evident that the men expected no such a cave-in as would endanger them. If Allen, immediately on finding that the gangway through which they traveled had been closed, had conducted the men down through the rock passage connecting the bottom and top split at C and out at the bottom split gangway (the passage was open and familiar to him), they could have all walked out and been saved, but this passage filled with gas in a short time, which made it impassable. In about two hours after the cave-in, the mine foreman made an effort to go in that way to rescue them, but he met a body of fire-damp that made it impossible. At about 11 o'clock, just before this attempt of the boss, the concussion of an explosion was felt by a party of rescuers in the bottom split gangway, but its cause was not discovered until the two living men, Robert W. Roberts and Anthony Frayne, were rescued and they explained it as having happened as follows: At about 10 o'clock, after finding that they were closed in, John Allen, accompanied by Robert W. Roberts, Anthony Frayne and Michael Scally, started away from their companions, leaving them all sitting in darkness at B on the gangway, while they were going to search for an opening to go out. A, on map, is the entrance of an old drift, the mouth of which was caved in and to which a hole had been driven from one of the breasts at x. They went up to the old drift workings, and although there was fresh air passing in, they failed to find an opening out through the cave-in. Returning to the breast they went in through the faces to the fourth breast where they met a body of gas. Allen carried a safety lamp and the others followed in the darkness. On returning towards the holed breast again at H, he struck a match to light his naked lamp, and the gas having by this time followed them, ignited and exploded. Beyond this these men cannot give any account. They were painfully burned and soon became unconcious from the effects of the after-damp.

At about 6 o'clock p. m., the old drift was opened and the rescuers on approaching the hole at *x* heard moaning. The breast below *x* was full of gas, and it not being safe to take even a safety-lamp down, parties were lowered in the dark guided by a rope, and they soon brought up John Allen, Robert W. Roberts and Anthony W. Frayne alive, and in a short time after, Robert was able to tell what had happened, and where the other men were when they parted from them. The breast was so full of gas that it was impossible to go down the gangway, and a large force of men was set to work to enlarge the opening to admit a larger volume of air.



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After this was accomplished some of the gas disappeared, and an attempt was made to go down the breast; but on reaching the first cross-heading it was found still to be full of gas below, and too dangerous to attempt to go farther unless it could be removed.

Doubtless the gas was was being carried away as rapidly as might be expected under the circumstances; but, owing to our anxiety, its disappearance seemed exceedingly slow and tardy, and rather than wait there in idleness all the company officials, except Mining Engineer W. Richards, went over to the slope accompanied by all the workmen to close headings for the purpose of reversing the course of the air-current which, if successful, might drive the gas away from the point we desired to reach. At 6 o'clock a. m., the writer having tired waiting for their return, and accompanied by Mr. A. Rees, superintendent Susquehanna Coal Company, and Mr. W. Richards, concluded to go in and see whether or not the gas was disappearing. Leaving Mr. Richards at the top of the breast at *x*, Mr. Rees lead the way down on the right side of the breast followed by the writer, and finding no gas we soon reach the gangway. Here we saw at once the effects of a terrible explosion. The gangway road was covered with broken cars, pieces of props, pieces of sheet-iron and refuse of all description. After making an examination of the gangway on both sides of the breast and finding it comparatively safe, we shouted to Mr. Richards to go outside and send a message over to the slope to tell all hands to come back at once and leave the ventilation as it was.

When Mr. Richards returned to his post, he was accompanied by Mr. Scott, the superintendent, who had just returned from the slope. The latter feared that we were in danger and tried to persuade us to return, but we knew that there was no danger and told him so, yet he went outside and left us, and he did not go down that mine until after all the bodies had been carried out. The most contemptible conduct on the part of a mining man that I have seen in an experience of thirty years in the mines of this valley. Mr. Rees and I continued our examination and found the bodies of twenty men strewn along the gangway between the points *b b* and *d*, and immediately returned to notify Richards of the fact, and tell him to send men with stretchers down as soon as possible. By 1 o'clock p. m. the bodies of were all brought out. The persons present having been there since the previous day were tired and hungry and they went home to rest. There being no provision made to relieve them with fresh men, the search had to be suspended till the same men returned at 7 o'clock May 17. They, accompanied by the writer, went in again and found the body of Michael Scally in the breast *h* near where the gas was ignited. Three more were found a short distance below the point where Mr. Rees and I went on the previous morning in the breast *h b*, and another was found covered by a pile of *débris* on the gangway between *b* and *d*. This completed the number missing, making twenty-eight altogether, two of whom are living.

It needs no more than a statement of the facts to show that Fire-boss Allen made a serious and inexcusable blunder, and thereby caused the death of himself and twenty-five of his companions. He had made another error a few months before which proved his unfitness for the important position he held, and the officials were informed of that, because the company paid a sum of money to settle the claims of the man who was burned through that act, and the writer told the superintendent that it was evident that Allen lacked the experience and knowledge necessary to fill his position properly. I have learned also that he was promoted to this position and held there against the will and judgment of the mine foreman.

I noticed several men who were not employes of the company helping, willingly and bravely, to carry the bodies out. Among them were two or three old officials of the company who had shortly before resigned their positions.

It is unusual to suspend efforts to rescue or recover the bodies of persons from mines after accidents, and it was exceedingly humiliating and disgraceful for a company which employs thousands of men and dozens of officials to depend on a few persons, and have to suspend operations for a whole night because these few failed from fatigue. There should have been men to relieve them, and the work should have been continued incessantly until all that remained of the lost had been restored to their friends. Such a state of things was unheard of in this region prior to this time, and let us trust that it will never occur again. The names of the victims of this disaster may be seen in the list of fatal accidents.

DISASTER AT THE HOLLENBACK COLLIERY.

As explained in another part of this report, the breaker of this colliery was damaged by a cyclone on the 19th day of August, 1890, and the colliery had not worked any from that date until this disaster occurred. They were making preparations to begin work on Monday, September 22, and on Saturday, the 20th, Larry Casey and James Sullivan, two young men, were sent to bail water at the bottom of the No. 2 underground slope. The water had to be hoisted to the head of the slope, and the hoisting engine is located on the surface. Edward Button was sent in to be headman of the slope. The No. 2 slope is at a distance of 2,000 feet east of the shaft on a north dip of about fifteen degrees. It had thirteen lifts, seven on the west and six on the east. These men went to work at 7 o'clock. It appears that no examination had been made of the place or of any of the workings of this slope since the cyclone. The fire-bosses and boss had been employed at the colliery all the time, and one examination of the other parts of the mine had been made. It has invariably been an exceedingly gaseous mine, and it has never been considered safe to enter any part of it at any time

without first making anexamination with a safety-lamp. On this morning the two water bailers were permitted to go to their work at the bottom of the slope without examination, and they worked there safely until 9 o'clock. At this time James Boswell, fire-boss, and Anthony Jennings, who was on this day starting to work as fire-boss, went in together, carrying naked lights together with their safety-lamps. They passed Charles Wiggins, who had been repairing the electric signals a short distance out from the head of the slope, passed Buttson again at the slope. The latter watched them going down until they turned into the first lift west, and in a few seconds after a terrific explosion occurred. Buttson was severely injured and rendered unconscious and did not know what followed.

Mr. Joseph Ford, the mine foreman, was on the surface and saw a dense volume of dust blown up from the shaft. He immediately ran up to the head of the Hillman vein slope and spoke down by telephone, and, finding nothing wrong there, he returned and descended the shaft and on his way to the No. 2 slope he met Wiggins feeling his way out in the dark, the explosion having extinguished his light. Mr. Ford conducted him back to the shaft and after sending him up, he went in again and at the head of the slope found Buttson painfully injured and unable to move. Ford, finding that he could not take him out without help, had to leave him there while he went outside again to call assistance from the Hillman slope. Then a party of several men went in and brought Buttson out. They passed the bodies of the two fire-bosses, who had been blown from the first lift over the apex of the slope and out a distance of 150 feet farther, and were driven under the end of a car. Of course they were instantly killed, the rescuers were unable to bring any of these bodies out when they brought Buttson, and believing that the explosion had left something on fire down the slope, they concluded to wait awhile lest another explosion would take place.

The writer was informed of the explosion shortly after 12 o'clock and immediately repaired to the mine which was not far from his residence.

Three hours had now elapsed since the explosion occurred, and it was not probable that any of the men could have lived this length of time in the after-damp of such an awful explosion.

Experienced men know that it is safer practice to enter a mine immediately after an explosion than in an hour or two after. The bosses as a rule make haste to go in and ascertain whether or not the explosion has set anything on fire and when he finds that no fire exists, he knows that the gases accumulating in consequence of the derangement of the airways cannot be exploded, unless ignited by the lamps of the men, and this can be guarded against. This opportunity was lost in this case. At 12 o'clock, when the writer was informed of the accident, no effort had been made to go down the slope farther than to rescue Buttson and bring him out. At about 1 o'clock the officials of the mine, led by the superintendents, descended the shaft and went

in and brought the bodies of the two fire-bosses out. Although there were about two dozen safety-lamps at the mine, the writer failed to find one that would be safe to carry into gas. The officials had nothing but an idle mine to take care of for a month and yet the lamps had been so neglected that only two or three were fit to use. Before entering to look for the bodies of Sullivan and Casey, new lamps and a number of new gauzes had to be obtained. At about 5 o'clock the party entered again and by this time the after-damp had cleared so as to enable them to go down the slope and recover the bodies of the missing young men. They were found lying on their faces one a few feet in advance of the other, near the fourth lift. They evidently had made an effort to walk up the slope and fell from the asphyxiating effects of the after-damp. In this struggle for life they had walked up a distance of about 800 feet. From this point up, the slope track was covered with a thickness of *débris* consisting of props, rocks and materials blown from the several lifts and stoppings. All the doors and stoppings were destroyed. Double timber was blown out and large falls of coal and roof was brought down. The workings of the three upper lifts west of slope were entirely transformed into a complete wreck, showing that the explosions had been unusually powerful and destructive.

Mr. Boswell's staff was found at the branch of the first lift. His body and that of Mr. Jennings were found 150 feet over the apex of the slope, having been blown a distance of about 500 feet. Evidently they entered the first lift with their naked lamps trusting that the air-current was pursuing its proper course and that no fire-damp could exist out on the gangway at any distance from the faces of the workings, and they walked into an explosive air unexpectedly at an unguarded moment.

When we consider that this part of the mine had not been examined for over a month and that it was the part that exuded the largest volume of gas, it is difficult to conceive any reason for omitting the usual common precaution of using only safety lamps until it was ascertained that the air-currents were circulating properly and that no accumulation of fire-damp existed. But the fact that they did this, and that they and the mine foreman had permitted the water bailers to go down that slope on this and on the previous morning without previous examination or knowledge of the condition of these workings, showed clearly that neither thought of nor realized the probability of something having occurred to obstruct or divert the course of the air currents during the cessation of work at the mine, and that a large body of fire-damp might have accumulated.

If all the mine officials were as inconsiderate as these were we would have disastrous explosions weekly, but fortunately such deficiency is seldom disclosed in the practice of experienced mine foremen.

The foreman of this gaseous mine was comparatively a stranger to this mine and to this region. Mr. Boswell had been employed in this

colliery for years as a mechanic, putting in water pipe, keeping pumps in repair, and splicing wire ropes, etc. For this work he was a very excellent man, he was a valuable and reliable workmen and had opportunity to see fire-damp in the safety lamp frequently but had not been entrusted to fill the important duties of a fire-boss till recently. His mind was trained for other work, and I am reliably informed that he, himself did not feel that he was fit, but his work on pipe, etc., had lessened, owing to the partial exhaustion of the mine, and he was directed to do the duties of fire-boss in the early morning and of a mechanic the remaining portion of the day to save employing another man. An economy akin to that of a miner, who, on finding his keg full of powder dampened, took it home and placed it in the stove oven to dry. It exploded and injured his family and destroyed his property. Such I regret to state was the nature and consequences of much of the economical practice introduced in the management of the collieries of this company during the year 1890.

Disaster at the No. 4 Slope, Susquehanna Coal Company.

This colliery is located at Nanticoke and is operated by a slope. At about 9 o'clock a. m., April 2, an explosion of fire-damp occurred causing the death of William A. James, James Adams, John Gubovage, Morgan Price and Joseph Beranski, and severely injuring John J. Griffiths, John Ruddick, George Elmy and Michael Barinski.

Robert Pratt, the fire boss who examined that section on the morning of the explosion, reported that a body of gas was found in the breast where William A. James was going to work and told James of it, and told him, also, to stay on the gangway until the bratticemen should go in and extend the brattice to clear the gas. He also reported the presence of the gas to Morgan Price who worked the next breast on the return side, and told him not to go up his breast with naked light and offered him a safety lamp. Price refused to take the safety lamp, saying that he was not going to work there, that the breast was finished, and that he was going to work in another place. Pratt gave safety lamps to each of the miners working in the other three breasts, viz: William A. James, James Adams and John Ruddick.

The four breasts in which these four miners were working were driven parallel up a pitch of about 35 degrees and were all approaching a roll where the coal turned right up to a pitch of about 50 degrees. Price's breast was up to the roll and was stopped, but he had a few car loads of loose coal in and along the chute, and he and his laborer went to work loading this out.

There were two headings (cross cuts) open between James and Price's breasts, and the air-current passed first up James' breast, then through Price's, Adams' and Ruddick's.

Mr. Pratt told George Elmy, the day fire-boss, of the gas in James' breast and requested him to go in to see to it. John J. Griffiths, the brattice man, was sent in to close one of the headings and to put up brattice. When Mr. Elmy went in he found that Griffiths had closed the heading, but the gas did not appear to move. While James went up to his breast, Elmy went up to Adams' breast to look across Price's breast and through the heading into James' and was able to see the latter's light. This convinced them that the upper heading, driven through the previous day was open, and it puzzled them to know why the gas did not move away. While up in the heading from Adams, breast Elmy saw a naked light below in Price's breast, but did not say anything. He told Adams to go down to the gangway from the face and went down himself. James was sitting on the gangway at his own breast when Elmy joined him and in a few seconds the explosion occurred with the usual destructive effects.

The mine foreman and other workmen in the other parts of the mine felt the shock and ran to rescue the injured. They found the place badly wrecked and filled with after-damp, but they succeeded in a short time in bringing them all out. James, Adams and Gubovage were instantly killed. Price was severely burned and otherwise injured and died that night at 9 o'clock. Joseph Beranski was severely injured and died on the way to the hospital. Griffiths and Ruddick were burned and severely injured. Elmy and Barinski were more or less burned and injured.

It is not known how the gas was ignited, but the circumstances makes it evident that immediately after Elmy went down from Adams' breast, that the gas moved in a body and came in contact with Price's naked lamp in the next breast, which produced the explosion.

It was a mistake to leave any of the men go to work in their respective places until after the gas was removed, because they were all working in its path, but the fire-bosses, trusting that it would be safely diffused before reaching them, permitted them to go. It proved a fatal error of judgment, and taught a lesson, which we hope will not be forgotten. Fire bosses should never take such chances, but should choose rather to err on the safe side.

PROSECUTIONS FOR VIOLATION OF THE MINE LAW.

Complaint was made against John Berkeiser, mine foreman of the Nottingham Colliery, for violating general rules 4, 5 and 6, in not seeing that proper examinations were made of the workings in the vicinity of the points when the disaster of February 1, took place. He was summoned to appear before the court on February 22, and, waiving a hearing, entered bail to appear in court of quarter sessions. On April 11 a true bill was granted in the case by the grand jury. The case has been

placed on the trial list of every session since, but has not been reached yet.

On May 7 Robert Pratt and George Elmy, both fire-bosses at the No. 4 slope colliery, at Nanticoke, were charged with violation of the provisions of rules 5 and 8 of article 12 of the mine law, and were arrainged before Judge Woodward. Both pleaded guilty and each was fined fifty dollars and costs.

TABLE I—*Showing Location of Collieries in the Third Anthracite District.*

NAME OF COLLIERY.	Name of operator.	Location Luzerne county.	Name of superintendent.	Postoffice address.
Hollenback	Lehigh and Wilkes-Barre Coal Company	Wilkes-Barre		Wilkes-Barre.
Empire	" " "	"		"
Stanton	" " "	"	Thomas H. Phillips, gen. man.;	"
South Wilkes-Barre	" " "	"	Elmer H. Lawall, div. supt.;	"
Jersey No. 8	" " "	Ashley	George Scott, supt.; H. W. Saums,	"
Sugar Notch shaft	" " "	Sugar Notch	ass. supt.; M. R. Morgans, dist.	"
Lance No. 11	" " "	Plymouth	supt.; L. L. Sarge, dist. supt.;	"
Nottingham No. 15	" " "	"	Wm. Leckie, dist. supt.	"
Reynolds No. 16	" " "	"		Sugar Notch.
Wanamie Nos. 18 and 19	" " "	Wanamie		Plymouth.
Baltimore Shaft No. 2	Delaware and Hudson Canal Company	Wilkes-Barre		Providence, Scranton.
Baltimore Shaft No. 3	" " "	"		"
Baltimore tunnel	" " "	"		"
Conyngham	" " "	"		"
Boston	" " "	Plymouth twp.	A. H. Vandling, gen. man., C. H.	"
No. 2 Plymouth	" " "	Plymouth	Scharar, min. eng.	"
No. 3 Plymouth	" " "	"		"
No. 4 Plymouth	" " "	"		"
No. 5 Plymouth	" " "	"		"
No. 4 tunnel	Susquehanna Coal Company	Nanticoke		Wilkes-Barre.
No. 1 slope	" "	"		Nanticoke.
No. 2 slope	" "	"		Wilkes-Barre.
No. 3 slope	" "	West Nanticoke	J. A. Stearns, gen. man.; George	Nanticoke.
No. 4 slope	" "	Nanticoke	F. Morgan, gen. supt.; J. H.	"
No. 6 slope	" "	Glen Lyon	Bowden, min. eng.; A. Rees,	"
No. 1 shaft	" "	Nanticoke	gen. inside supt.	"
No. 2 shaft	" "	"		"
No. 6 shaft	" "	Glen Lyon		"
No. 6 tunnel	" "	"		"
No. 1 shaft	Kingston Coal Company	Edwardsdale		Kingston.
No. 2 shaft	" "	"		"
No. 3 shaft	" "	"	Daniel Edwards, gen. man.; Mor-	"
No. 4 shaft	" "	"	gan D. Rosser, supt.; Gwilynn	"
Gaylord shaft	" "	Plymouth	Edwards, supt.	"
Gaylord slope	" "	"		"
Alden	Alden Coal Company	Alden	K. M. Smith	Alden.
Avondale	Delaware, Lacka. and Western R. R. Co.	Plymouth twp.	W. R. Storrs, gen. man.; W. H.	
Woodward Nos. 1 and 2	" " "	"	Storrs, gen. outside supt.; B.	Scranton.
			Hughes, gen. inside supt.	
Dodson	Plymouth Coal Company	Plymouth	James B. Davies	Plymouth.
Dorrance	Lehigh Valley Coal Company	Wilkes-Barre	W. A. Lathrop	Wilkes-Barre.
Franklin	" "	"	"	"
No. 1 Red Ash	Red Ash Coal Company	Wilkes-Barre twp.	M. B. Williams	"
No. 2 Red Ash	" "	"	"	"
Lee colliery	Newport Coal Company	Newport twp.	Charles Parrish	"
West End	West End Coal Company	Mocanaqua	John Teasdale	Shickshinny

Parrish,	Parrish Coal Company,	Plymouth,	H. H. Ashley,	Plymouth.
Warrior Run,	A. J. Davies,	Hanover twp.,	A. J. Davies,	Wilkes-Barre.
Maffet,	Hanover Coal Company,	Sugar Notch,	J. Roberts, Jr.,	"
Hillman,	Hillman Vein Coal Company,	Wilkes-Barre,	Joseph Shearn,	"

TABLE II—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Third Anthracite Mining District, for the year ending December 31, 1890.*

	NAMES OF COLLIERIES.	Location—Luzerne county.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules	Number mine locomotives.
	Lehigh and Wilkes-Barre Coal Company.											
1.	Hollenback No. 2	Wilkes-Barre	105,276.70	86,112.45	145.85	283	5	4	3,017	39	33	. . .
2.	Empire No. 4	"	282,635.40	278,277.45	198.25	734	4	6	8,395	30	66	2
3.	South Wilkes-Barre Nos. 3 and 5	"	21,370.90	21,370.90	*	92	9	4	693	12	4	. . .
4	Stanton No. 7	"	115,574.65	104,681.65	90.60	508	. . .	9	1,456	43	59	1
5.	Jersey No. 8	Ashley	69,630.50	64,767.50	113.85	376	28	4	2,113	30	23	1
6.	Sugar Notch No. 9	Sugar Notch	167,740.00	164,945.20	198.50	509	. . .	9	5,964	25	40	1
7.	Lance No. 11	Plymouth	231,474.95	227,385.45	208.25	523	2	14	7,466	18	56	. . .
8.	Nottingham No. 15	"	399,492.30	394,325.80	171.90	1,118	11	19	8,686	33	119	3
9.	Reynolds No. 16	"	164,743.50	163,741.00	220.05	451	1	. . .	4,234	13	62	. . .
10.	Wanamie Nos. 18 and 19	Wanamie	141,866.95	140,302.45	196.30	507	1	4	5,626	30	54	. . .
	Totals		1,697,805.85	1,645,909.85	171.50	5,101	61	73	47,650	273	516	8
	Delaware and Hudson Canal Company.											
11.	Baltimore slope	Wilkes-Barre	86,059.70	86,059.70	201.50	268	1	. . .	2,093	23	41	. . .
12.	Baltimore shaft No. 3	"	5,038.35	5,038.35	21.25	173	. . .	. . .	223	12	16	. . .
13.	Baltimore shaft No. 2	"	113,272.30	111,462.65	189.74	346	. . .	4	3,696	18	51	2
14.	Baltimore tunnel	"	58,616.95	46,460.95	144.00	142	. . .	1	1,501	20	18	. . .
15.	Conyngham	"	197,726.70	190,268.70	191.75	352	. . .	1	4,578	12	52	. . .
16.	Boston	Plymouth township	53,191.65	45,091.65	105.25	125	. . .	2	1,179	24	14	. . .
17.	Shaft No. 2	Plymouth	181,624.00	180,055.20	184.75	431	3	5	6,448	21	59	. . .
18.	Shaft No. 3	"	106,560.35	106,560.35	162.75	368	1	2	3,520	15	50	. . .
19.	Shaft No. 4	"	140,014.55	135,823.90	159.85	303	. . .	1	3,651	21	41	1
20.	Shaft No. 5	"										
	Totals		942,104.55	906,821.45	151.20	2,508	5	16	26,889	166	342	3

* No breaker

10 MINES.

	Susquehanna Coal Company.											
21.	No. 1 slope,	Nanticoke,	164,092.70		214.00	187	3		26	70	1
22.	Nos. 1 and 4 tunnel, Breaker No. 1.						1				
23.	No. 1 shaft, George vein,						1				
24.	No. 1 shaft, Forge vein.						2				
25.	No. 1 shaft, Lee vein, Breaker No. 2.	"	393,693.65		214.05	1,478	4		106	147	7
26.	No. 2 slope,						6				
27.	No. 3 slope or Harvey,	West Nanticoke,	65,830.50	1,412,244.15	118.90	136	1	31,251	29	23	1
28.	No. 2 shaft,	Nanticoke,	458,892.75		222.55	1,065	1		66		2
29.	No. 4 slope, Breaker No. 5,						10				
30.	No. 6 shaft,						8				
31.	No. 6 slope, Breaker No. 6,	Glenlyon,	355,006.30		205.70	1,158	3		84	118	2
32.	No. 6 tunnel,						7				
							1				
							3				
	Totals,		1,432,515.90	1,412,244.15	195.04	4,024	14	31,251	311	358	13
	Kingston Coal Company.											
33.	No. 1 shaft,	Edwardsdale,	173,706.50	164,381.30	183.80	397	4	5,264	36	50	
34.	No. 2 shaft,						8				
35.	No. 3 shaft, Breaker No. 2,		293,700.40	293,552.10	188.05	652	1				
36.	No. 4 shaft,	"	93,011.10	93,011.10	159.75	248	3	6,930	39	66	3
37.	Gaylord slope and shaft,	Plymouth,	228,695.45	226,400.45	161.75	618	1	2,694	24	19	
							2	5,641	31	71	
							4				
	Totals,		789,113.45	777,344.95	173.33	1,915	7	20,529	130	206	3
	Delaware, Lackawanna and Western R. R. Co.											
38.	Avondale,	Plymouth township,	167,048.10	146,309.10	179.00	509	1	4,308	35	75	1
39.	Woodward Nos. 1 and 2,	"	135,592.20	117,749.70	184.60	355	1	2,958	30	41	2
							4				
	Totals,		302,640.30	264,058.80	181.80	864	2	7,266	65	116	3
	Lehigh Valley Coal Company.											
40.	Franklin slopes,	Wilkes-Barre,	65,644.65	64,561.15	122.15	404	6	2,413	39	36	1
41.	Dorrance,	"	115,352.00	102,609.75	237.05	241	3	2,574	25	18	1
							1				
	Totals,		180,996.65	167,170.90	179.60	645	9	4,987	64	54	2
	Red Ash Coal Company.											
42.	Red Ash No. 1,	Wilkes-Barre township,	122,013.65	122,013.65	171.50	284	1	3,655	15	24	
43.	Red Ash No. 2,	" "	158,698.75	155,536.75	169.90	393	3	4,723	8	38	
							2				
	Totals,		280,712.40	277,550.40	170.70	677	1	8,378	23	62	
	Miscellaneous Coal Companies.											
44.	Alden Coal Company,	Alden,	276,275	267,538.05	229.00	649	1	8,687	18	62	
45.	Dodson, Plymouth Coal Company,	Plymouth,	169,548	151,036	193.85	367	6	5,739	16	39	
46.	Hillman Vein Coal Company,	Wilkes-Barre,	68,537.50	50,758.75	159.70	313	5	2,955	9	832	
47.	Maffet, Hanover Coal Company,	Sugar Notch,	131,910.85	131,198.35	177.00	351	2	3,532	12	24	
48.	Parrish Coal Company,	Plymouth,	300,761.90	295,747.40	205.20	626	1	8,837	25	74	
49.	West End Coal Company,	Mocanagua,	167,747.90	151,798.30	221.90	407	4	4,592	22	50	2
50.	Lee, Newport Coal Company,	Newport township,	99,313	85,870	191.20	255	1	2,459	10	22	
51.	Warrior Run, A. J. Davis,	Hanover township,	67,725.50	67,024.50	146.25	245	3	1,930	28	18	
							2				
	Totals,		1,281,819.65	1,200,971.35	190.51	3,213	9	38,291	140	321	2
							26				

TABLE II *Recapitulation.*

	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers used.	Number horses and mules.	Number mine locomotives.
Lehigh and Wilkes-Barre Coal Company	1,696,805.85	1,645,909.85	171.50	5,101	61	73	47,650	273	516	8
Delaware and Hudson Canal Company	942,104.55	906,821.45	151.20	2,508	5	16	26,880	166	342	3
Susquehanna Coal Company	1,432,515.90	1,412,244.15	195.04	4,024	14	52	31,251	311	358	13
Kingston Coal Company	780,113.45	777,344.95	153.33	1,915	4	18	20,529	130	206	3
Delaware, Lackawanna and Western Railroad Company	302,640.30	294,058.80	181.80	864	2	9	7,266	65	116	3
Lehigh Valley Coal Company	180,996.65	167,170.90	179.60	645	1	5	4,987	64	54	2
Red Ash Coal Company	280,712.40	277,550.40	170.70	677	1	5	8,358	33	62	1
Miscellaneous coal companies	1,291,819.65	1,200,951.35	190.51	3,213	9	26	38,291	140	321	2
Grand totals	6,907,708.75	6,652,071.65	176.71	18,947	100	208	185,241	1,172	1,975	34

TABLE III—*Showing the number of each class of employes at each colliery in the Third Anthracite District, during the year 1890.*

NAMES OF COLLERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Lehigh and Wilkes-Barre Coal Company.															
1. Hollenback,	1	40	50	47	15	8	161	1	3	20	50	47	1	122	283
2. Empire,	1	171	171	100	52	31	526	1	3	16	118	70	1	208	734
3. South Wilkes-Barre,	1	11	22	31	3	1	69	1	2	7	. . .	12	1	23	92
4. Stanton,	1	88	88	35	44	36	292	1	3	25	138	50	1	216	508
5. Jersey No. 8,	1	74	65	36	8	16	200	1	3	12	102	56	2	176	376
6. Sugar Notch No. 9,	1	119	95	54	35	25	329	1	4	14	97	63	1	180	509
7. Lance No. 11,	1	103	85	57	51	23	320	1	4	10	146	40	2	203	523
8. Nottingham,	1	290	210	107	100	53	761	1	8	16	230	100	2	357	1,118
9. Reynolds,	1	90	96	33	35	21	276	1	4	6	110	53	1	175	451
10. Wanamie,	1	115	120	41	32	22	331	1	4	12	92	66	1	176	507
Totals,	10	1,101	1,002	541	375	236	3,265	10	37	136	1,083	557	13	1,836	5,101
Delaware and Hudson Canal Company.															
11. Baltimore slope,	1	40	40	30	25	7	143	1	5	7	70	36	6	125	268
12. Baltimore Shaft No. 3,	1	23	23	23	13	4	87	1	5	7	48	23	2	86	173
13. Baltimore Shaft No. 2,	1	65	50	29	39	9	193	1	6	15	96	32	3	153	346
14. Baltimore tunnel,	1	13	13	12	6	2	47	. . .	4	12	50	27	2	95	142
15. Conyngham,	1	71	75	36	32	16	231	1	5	10	56	48	1	121	352
16. Boston,	1	13	13	19	3	. . .	49	1	4	12	17	41	1	76	125
17. No. 2 Plymouth,	1	100	100	51	47	17	316	1	4	13	64	32	1	115	431
18. No. 3 Plymouth,	1	77	77	50	52	14	271	1	5	10	45	34	2	97	368
19. No. 4 Plymouth,	1	51	60	58	21	14	205	1	6	14	41	35	1	98	303
20. No. 5 Plymouth,															
Totals,	9	453	451	308	238	83	1,542	8	44	100	487	308	19	966	2,508

TABLE III—*Continued.*

NAMES OF COLLERIES.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Susquehanna Coal Company															
21. No. 1 slope,	1	6	6	3	3	. . .	19	1	21	7	63	75	1	168	187
22. Nos. 1 and 4 tunnel,															
23. No. 1 shaft, G seam,															
24. No. 1 shaft, F seam,	4	309	499	148	128	59	1,147	2	18	42	115	152	2	331	1,478
25. No. 1 shaft, Lee seam,															
26. No. 2 slope,															
27. No. 3 slope,	1	23	12	18	8	. . .	62	1	4	4	36	29	. . .	74	136
28. No. 2 shaft,															
29. No. 4 slope,	2	217	346	111	114	42	832	1	9	22	128	71	2	233	1,065
30. No. 6 shaft,															
31. No. 6 slope,															
32. No. 6 tunnel,	3	254	378	94	116	43	888	1	13	21	166	67	2	270	1,158
Totals,	11	809	1,241	374	369	144	2,948	6	65	96	508	394	7	1,076	4,024
Kingston Coal Company.															
33. No. 1 shaft,	1	118	80	38	39	19	295	1	6	8	54	31	2	102	397
34. No. 2 shaft,	2	180	110	49	49	37	427	2	15	14	133	60	1	225	652
35. No. 3 shaft,	1	78	42	24	18	13	176	1	5	9	36	20	1	72	248
36. No. 4 shaft,	1	150	102	44	88	21	406	1	8	10	150	42	1	212	618
37. Gaylord,															
Totals,	5	526	334	155	194	90	1,304	5	34	41	373	153	5	611	1,915
Delaware, Lackawanna and Western Railroad Co.															
38. Avondale,	2	113	125	50	52	16	358	1	6	24	74	45	1	151	509
39. Woodward,	2	68	68	30	20	9	197	2	5	6	67	76	2	158	355
Totals,	4	181	193	80	72	25	555	3	11	30	141	121	3	309	864

Lehigh Valley Coal Company.															
40. Franklin,	1	88	69	24	34	17	233	1	10	16	84	58	2	171	404
41. Dorrance,	1	42	47	22	30	8	150	1	5	7	40	35	3	91	241
Totals,	2	130	116	46	64	25	383	2	15	23	124	93	5	262	645
Red Ash Coal Company.															
42. Red Ash No. 1,	1	58	52	31	24	11	177	1	4	6	56	38	2	107	284
43. Red Ash No. 2,	1	99	103	14	39	15	271	1	4	4	56	54	2	122	393
Totals,	2	157	155	45	63	26	448	2	9	10	112	92	4	229	677
Miscellaneous Coal Companies.															
44. Alden,	1	155	134	70	50	19	429	1	11	14	136	52	6	220	649
45. Dodson,	1	84	50	81	33	14	263	1	5	7	61	27	3	104	367
46. Hillman vein,	1	61	58	46	19	24	209	1	5	8	58	29	3	104	313
47. Maffet,	2	87	89	7	23	7	215	1	5	6	75	46	3	136	351
48. Parrish,	2	135	138	54	67	24	420	2	6	15	112	68	3	206	626
49. West End,	2	92	89	51	31	5	270	1	5	7	58	62	4	137	407
50. Lee,	1	50	56	32	18	8	165	1	4	9	58	16	2	90	255
51. Warrior Run,	1	68	60	10	15	9	163	1	4	7	49	19	2	82	245
Totals,	11	732	674	351	256	110	2,134	9	45	73	607	319	26	1,079	3,213

Recapitulation.

Lehigh and Wilkes-Barre Coal Company,	10	1,101	1,002	541	375	236	3,265	10	37	136	1,083	557	13	1,836	5,101
Delaware and Hudson Canal Company,	9	453	451	308	238	83	1,542	8	44	100	487	308	19	966	2,508
Susquehanna Coal Company,	11	809	1,241	374	369	144	2,948	6	65	96	508	394	7	1,076	4,024
Kingston Coal Company,	5	526	334	155	194	90	1,304	5	34	41	373	153	5	611	1,915
Delaware, Lackawanna and Western Railroad Company,	4	181	193	80	72	25	555	3	11	30	141	121	3	309	864
Lehigh Valley Coal Company,	2	130	116	46	64	25	383	2	15	23	124	93	5	262	645
Red Ash Coal Company,	2	157	155	45	63	26	448	2	9	10	112	92	4	229	677
Miscellaneous coal companies,	11	732	674	351	256	110	2,134	9	45	73	607	319	26	1,079	3,213
Totals,	54	4,089	4,166	1,900	1,631	739	12,579	45	260	509	3,435	2,037	82	6,368	18,947

TABLE IV – *List of Fatal Accidents occurring in and about the Mines of the Third Anthracite Mine District, for the year ended December 31, 1890.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location, Luzerne county.	Nature and cause of accident.
Jan. 1,	1	John Bogoos,	Laborer,	25	...	...	Tunnel No. 6,	Glenlyon,	Instantly killed by a fall of top coal. While loading a car in a counter gangway a bridge of top coal unexpectedly fell and caused the injury. The miner narrowly escaped.
6,	2	Mike Fifer,	"	27	...	...	Shaft No. 6,	"	Fatally hurt by a fall of rock. Though cautioned against going under a projecting piece of dangerous rock, he went under unseen and the rock fell on him; he died on the way to the hospital.
7,	3	Fred. Klinges,	Miner,	37	...	...	Shaft No. 3,	Plymouth township,	Deceased fired a shot which dislodged two props, and while in the act of replacing one of them a large piece of slate fell on him killing him instantly.
24,	4	John Corkill,	"	45	1	2	West End,	Mocanaqua,	While working coal loosened by a blast, a large piece of sandstone fell on him injuring him so that death ensued in about three hours after.
Feb. 1,	5	Paul Schultz,	Timberman,	42	Wid.	1			The first five named men were instantly killed and the other three fatally injured by an explosion of fire-damp. Humphrey died on the way home, Jones died in thirty-six hours after the accident, and Dunstan died February 8. Thomas Lake, David Fox, John P. Thomas, Peter Lynn and John Dennis were more or less painfully injured by the same explosion. For full description of the accident see other part of this report.
1,	6	David J. Williams,	"	45	1	1			
1,	7	John Crossin,	Driver,	22	...	...			
1,	8	Edwin Parry,	Laborer,	30	...	...			
1,	9	John Davies,	"	32	...	...	Nottingham,	Plymouth,	
1,	10	John D. Humphrey,	Timberman,	42	1	6			
1,	11	Joseph Jones,	Miner,	35	1	...			
1,	12	James Dunston,	Fire-boss,	48	1	4			
3,	13	Joseph Loskowski,	Laborer,	25	...	...	Shaft No. 6,	Glenlyon,	Deceased had just descended the shaft in company with a cage full of men; finding, after stepping off at the bottom, that he was on the wrong side he attempted to run across just as the cage was starting up, and he was caught and crushed to death between the cage and side of shaft; several persons shouted to him keep off but with no effect.
6	14	Thomas Thomas,	Slate picker,	12	...	...	Breaker No. 3,	Plymouth township,	Killed while playing with a revolving shaft; his clothing caught and causing him to be wound around it causing his death.

	7.	15	Peter Carpinski	Laborer.	29	1	1	Tunnel No. 3.	West Nanticoke.	While the miner was prying down a piece of loose bony-coal deceased and another laborer were standing close by; the miner on discovering that the roof above was also coming jumped away, shouting to the others to do likewise, but deceased stood confusedly still and roof fell on him killing him instantly.
March	3.	16	Frank Cull.	Miner.	53	1	8			At about five o'clock p. m. the boy Jameson inadvertantly ignited a large gas feeder on the gangway side at a point 400 feet inwards from the shaft; the mine foreman soon reached the place and sent Jameson to call the workmen out; six of whom were working at a point 2,800 feet inside of the seat of the fire and the runner was with them. They were at the head of a rock plane leading down on a grade of 12 degrees to the Stanton mine, and the air current was moving from South Wilkes-Barre towards the Stanton and conveying the smoke from the fire in that direction. The men and the two boys attempted to go out through the smoke towards South Wilkes-Barre and were all suffocated. For full description of the accident, etc., see other part of this report.
	3.	17	Hugh Dugan.	"	37	1	4			
	3.	18	Thomas Williamson.	Laborer.	31	1	4			
	3.	19	James O'Donnell.	"	43	1	3	Shaft No. 3.	South Wilkes-Barre.	
	3.	20	Michael Ferry.	"	32					
	3.	21	Patrick McRealus.	"	24					
	3.	22	Thomas McDonnell.	Runner.	20					
	3.	23	James W. Jameson.	Driver.	17					
	5.	24	James Leonard.	Rockman.	26	1	1	Dodson.	Plymouth.	Fatally injured; while tamping a light charge of dynamite into a hole in a rock the dynamite exploded. He was using an iron bar and was driving it with a hammer; he died March 8, 1890.
	22.	25	Patrick McGinty.	Driver.	19			Empire.	Wilkes-Barre.	Fell under moving cars and was fatally injured; died on March 29.
	26.	26	Oliver Thomas.	"	17			Lance No. 11.	Plymouth.	Head crushed while coupling cars; died the same day.
	29.	27	David J. Price.	Miner.	53	1	9	Shaft No. 1.	Edwardsdale.	When firing a blast the squib "missed" and while in the act of igniting a second squib it instantly fired and exploded the blast; Price was so badly injured that death ensued the same day.
April	2.	28	William A. James.	"	34	1	1			All killed except Price and Beranski, and they died from their injuries the same day. The accident was caused by an explosion of fire damp. John J. Griffith, George Elmy, John Ruddick and Michael Barinski were severely injured by the same explosion. A full description is given in another part of this report.
	2.	29	Morgan Price.	"	36	1	2			
	2.	30	James Adams.	"	35	1	6	Slope No. 4.	Nanticoke.	
	2.	31	James Gubovage.	Laborer.	38					
	2.	32	Joseph Beranski.	"	35					
	18.	33	Ritz Makofski.	"	30			Nottingham breaker.	Plymouth.	Killed committed suicide by throwing himself under a train of cars on culm dump.
	19.	34	John Murphy.	Miner.	38	1	9	Lance No. 11.	Plymouth.	Killed; a missed squib held fire until pushed into the powder by deceased which caused the blast to explode.
May	2.	35	Andrew Ondiz.	Laborer.	32	1	2	Dodson.	"	Instantly killed by fall of rock; he returned immediately after blast was fired unknown to miner; fall of roof came on him.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location, Luzerne county.	Nature and cause of accident.
May 15,	36	John Allen,	Fire boss,	35	1	4	Jersey No. 8, Lehigh and Wilkes-Barre Coal Co.,	Ashley,	At about 9 o'clock a. m. on the 15th day of May a large area of the workings of the Baltimore seam in this mine, extending over the first, second, third and other lifts west of the slope, suddenly collapsed and caved in, cutting off the escape of twenty-eight men in the top split seam in the first lift. In about two hours after an explosion of gas occurred in which these twenty-six persons were killed. An opening was made into the mine by about six o'clock p. m., and John Allen, the fire boss, Robert W. Roberts and Anthony Frayne were brought out alive, but the three were badly burned and injured. Allen died at 4 o'clock the next morning. The bodies of the others were reached at about 8 a. m., on the 16th of May, except those of Mike Henry, Michael Scally, Robert Pritchard and two others who were found on the 17th. The explosion took place from a match lighted by John Allen which ignited a body of gas. If he had exercised the care that should have been taken under the circumstances they could have been brought out uninjured by about 7 o'clock that evening, or if he had led the men, immediately after the cave-in and before the place filled with fire-damp, down to the bottom split gangway they could have all walked out. The passage through which the fire bosses traveled frequently from one split to the other was still open and not affected by the cave-in, but it was filled with fire-damp in about half an hour after they were closed in. Allen had made serious mistakes before and he was evidently not a reliable man in cases of danger.
15,	37	Daniel Sullivan,	Miner,	45	1	9			
15,	38	John Hanson,	"	40					
15,	39	Thomas Voytocka,	Laborer,	21					
15,	40	Barlick Repisyk,	"	26	1				
15,	41	John Krost,	"	38	1				
15,	42	Anthony Panafbor,	"	27	1				
15,	43	Charles Jones,	Carpenter,	46	1				
15,	44	Owan Williams,	"	43	1	1			
15,	45	Henry Jones,	"	40	1				
15,	46	Richard Jones,	"	30	1				
15,	47	David Edwards,	"	30	1				
15,	48	Owen H. Parry,	"	20					
15,	49	Mike Henry,	"	62	1	5			
15	50	Mike Scally,	Miner,	38					
15,	51	John Scally,	Laborer,	20					
15,	52	John Gwark,	"	24					
15,	53	Thomas Williams,	Miner,	38	1	1			
15,	54	Romber Pritchard,	"	31	1	1			
15,	55	Joshua Williams,	"	31	1	3			
15,	56	John L. Williams,	"	32	1	1			
15,	57	Thomas D. Closs,	"	35	1				
15,	58	Henry H. Parry,	"	40	1	3			
15,	59	John James,	"	30	1	2			
15,	60	Ellis D. Williams,	Laborer,	53	1				
15,	61	Thomas Davies,	Carpenter,	45	1	4			

	17,	62	Robert Kreigg,	Carpenter,	36	1	5	Empire,	Wilkes-Barre,	Both instantly killed by an explosion of fire-damp; they did not exercise sufficient care while renewing a door and gas accumulated and was brought to their lamps and exploded.
	17,	63	William H. Thomas,	Carpenter helper,	23					
	26,	64	John Nesgroski,	Laborer,	40	1	1	Alden,	Alden,	Instantly killed by a fall of rock; it was a long, narrow piece of rock which fell unexpectedly on the track a distance of thirty feet back from the face of the breast.
	26,	65	Isaac Thomas,	"	26			Dodson,	Plymouth,	While standing a prop a fall of roof came upon him causing injuries resulting in his death in a few hours after.
	28,	66	Richard Davies,	"	47			Wanamie No. 18,	Wanamie,	While helping to lift a car on track the lever slipped and struck him on the abdomen; he walked home thinking he was not severely injured but he died in 22 hours.
June	12,	67	Jos. Baskinski,	"	21			Slope No. 4,	Nanticoke,	Killed by a fall of coal. The miner heard the coal cracking and jumped away shouting to deceased to look out, but deceased got bewildered and jumped under the fall.
	25,	68	Samuel Gregory,	Driver,	20			Shaft No. 4,	Plymouth,	Killed by a trip of cars at foot of plane. He evidently mistook the track and stood on the one on which the cars were running and they ran upon him.
July	16,	69	John Lyons,	Laborer,	25			Dorrance,	Wilkes-Barre,	By a mistake he stumbled into the cage pit when it was filled with hot water; he was taken out immediately but he was scalded so that he died on the 22d of July.
	21,	70	Saverio Allienell,	"	22			Breaker No. 6,	Glenlyon,	While unloading a railroad car of prop timber one rolled upon and killed him.
	22,	71	John Quinn,	Driver,	17			Nottingham,	Plymouth,	Killed by being crushed between cars at the junction of two roads.
	23,	72	John Tugdy,	"	22			Warrior Run,	Warrior Run,	Fell off the front end of a car and the car ran upon him injuring him so severely that death ensued on the 25th of July.
Aug.	2,	73	John Kelly,	Slate picker,	15			Woodward breaker,	Plymouth township,	Fatally injured, and died that night, by being struck by sheave-wheel in breaker while going behind it for his dinner pail.
	20,	74	Michael Guperko,	Laborer,	26	1	1	Slope No. 4,	Nanticoke,	Killed on slope by runaway trip of cars; they were cleaning the slope and when a trip of cars were being hoisted the rope broke and the cars ran back. Thomas Parfit and Elias Griffith were painfully injured at the same time.
Sept.	4,	75	John E. Jones,	Miner,	28	1	1	Shaft No. 4,	Edwardsdale,	Fatally injured by an explosion of fire-damp; died September 6th. He and the mine foreman, John Armstrong, went up an old fall in an abandoned breast and unexpectedly ignited a body of gas. Armstrong escaped with severe burns on face and hands.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location, Luzerne county.	Nature and cause of accident.
Sept 12.	76	George Ford.	Miner.	39	1	2	Shaft No. 3.	South Wilkes-Barre.	Instantly killed; while descending a shaft on the water tank; his safety lamp fell into a body of gas beneath and caused an explosion. The gas had accumulated after the water had been taken out of that portion of the shaft beneath the Hillman seam. Ford's body was recovered at about 2 a. m. September 15; it was found in the water tank.
16.	77	Thomas Rock.	Laborer.	31	1	1	Reynolds No. 16.	Plymouth.	Killed by top coal falling and rolling which crushed him against the end of a car.
19.	78	Hugh Parker	Door tender.	67	1	...	Avondale.	"	A car ran against the door which he was in the act of opening and he was fatally injured; he died on the 2d of October.
20.	79	James Boswell.	Fire boss.	44	1	5	Hollenback.	Wilkes-Barre.	The first two were instantly killed and the other two were suffocated by after-damp; the result of an explosion of fire-damp which was caused by the two fire-bosses walking into a body of gas with naked lights. The gas having accumulated in a large body at an unexpected point. For full description see another part of this report.
20.	80	Anthony Jennings.	"	30	...	...			
20.	81	Larry Casey.	Laborer.	24	...	...			
20.	82	James Sullivan.	"	26	1	...			
22.	83	Andrew Metro.	Miner.	...	1	...	Shaft No. 1.	Edwardsdale.	Both went into an abandoned breast to get some old rails for use in their own breast and having naked lights exploded a body of fire-damp. Both were fatally burned and both died on the 24th day of the same month.
22.	84	Michael Washko.	Laborer.	...	...	...			
Oct. 4.	85	Joseph Grotus.	"	25	...	...	Nottingham.	Plymouth.	Fatally injured. He was helping the miner to pry a piece of rock down and just as the rock was falling he slipped and fell under it; he died on reaching the hospital.
8.	86	Charles Armstrong.	"	70	...	...	Gaylord shaft.	"	Armstrong was killed and Wilson fatally injured by an explosion of gas. A blast in a cross cut bursting through into the adjacent breast ignited a body of fire-damp producing an explosion. These two men were on the gangway waiting for the blast and the concussion of the explosion caused the injury. Wilson died October 13.
8.	87	Robert Wilson.	Miner.	44	1	2			

	9.	88	John Basela.	Laborer.	25			Dodson.	"	While loading at upper side of car a large mass of coal fell off the upper rib and crushed him to death against the car.
	31.	89	Peter Kearny.	Miner.	68	1	6	Jersey No. 8.	Ashley.	While working a shot out at face of breast a large lump of coal fell down upon him killing him instantly.
Nov.	10.	90	Andrew Poyawis.	Laborer.	40			Maffet.	Sugar Notch.	Fell off the cage when ascending the shaft and was instantly killed.
	15.	91	John Beaumont.	Miner.	36	1	5	Empire.	Wilkes-Barre.	Instantly killed by being struck by a piece of slate which fell from the roof.
	24.	92	Wm. Zimmerman.	"	21	1	1	Dodson.	Plymouth.	While running from a blast he stumbled and fell, and being unable to reach a place of safety he was struck by a piece of coal from the blast and injured so that death ensued on the following day.
	25.	93	Frank McCauley.	Driver.	16			Shaft No. 1.	Edwardsdale.	A small quantity of gas ignited frightening the mule and causing the deceased to fall under the cars; he was so severely injured that death ensued before he was conveyed home.
	27.	94	John Johnson.	"	18			Red Ash No. 1.	Wilkes-Barre.	Fell while unhitching the mule from a runaway car out on the culm-dump. The car ran upon him and fractured his spine; he died in a few days.
	29.	95	John McDonald.	Miner.	55			Hollenback.	"	Fatally injured by a blast which exploded when he was in the act of igniting the match; he died December 1.
Dec.	3.	96	Samuel Rakrutchet.	Laborer.	43	1	1	Slope No. 4.	Nanticoke.	Fatally injured by a fall of top coal while he and his miner were returning together to see the result of a blast; died December 4.
	13.	97	Martin Tuberty.	Miner.	45	1	5	Shaft No. 3.	Plymouth township.	Was in the act of charging a hole for blasting when a piece of top coal fell on him and injured him so that death occurred on the 17th.
	17.	98	Joseph Tedresski.	Laborer.	30	1	1	Shaft No. 2.	Nanticoke.	A large piece of slate fell on the gob and slid down upon him crushing his leg; he was taken to the hospital and died there.
	17.	99	William Kennedy.	Miner.	53	1		Balt. Shaft No. 2.	Wilkes-Barre.	Instantly killed by a blast; it fired while he was igniting the match.
	23.	100	William Dougal.	Laborer.	19			Jersey No. 8.	Ashley.	Instantly killed by a small piece of top coal which fell on him. The miner was close by talking to him when the accident happened.
Totals.		100				55	176			

N. B.—One fatal accident was reported which was not included in the above list; S. S. James, a non employe, who was killed at the Empire breaker on March 26th. He was standing on the track of a culm car and was struck and crushed between the car and breaker structure.

Recapitulation of Fatal Accidents.

OCCUPATION.	Number.	Percent.	NATIONALITY.	Number.	Percent.	CAUSE OF ACCIDENTS.	Number.	Percent.
Miner	30	30	Welsh	29	29	By explosions of gas	51	51
Laborer	39	39	Irish	26	26	By falls of roof and coal	15	15
Drivers and runners	10	10	English	10	10	By mine cars underground	8	8
Brattice and timber men	13	13	Polish	18	18	By explosions of powder and blasts	6	6
Fire bosses	4	4	Hungarian	8	8	By falling down shafts	4	4
Rock men	1	1	German	3	3	By miscellaneous causes underground	11	11
Door tenders	1	1	Scotch	3	3	By miscellaneous causes on surface	5	5
Slate pickers	2	2	American	2	2			
Total	100	100	Italian	1	1	Total	100	100
			Total	100	100			

TABLE V.—*List of Non-Fatal Accidents occurring in and about the mines of the Third Anthracite Mine District for the year ended December 31, 1890.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location. Luzerne county.	Nature and cause of accident.
Jan. 4.	1	John Berkeiser,	Mine foreman.	40	M.	4	Nottingham,	Plymouth,	Severely cut on head and slightly burned by an explosion of fire-damp.
6.	2	Samuel Smurl,	Miner,	60	M.	10	Dorrance,	Wilkes-Barre,	Leg broken and bruised on body; a blast exploded just as he was firing the match.
6.	3	Thomas R. Richards,	"	31	M.	5	Nottingham,	Plymouth,	Face and hands burned by an explosion of fire-damp; result of carelessness.
10.	4	Joseph Karpa,	Laborer,	45	S.	..	West End breaker,	Mocanaqua,	Leg broken; while riding up the plane on a loaded car he jumped off and broke his leg.
17.	5	William J. Kemp,	Miner,	32	M.	..	Shaft No. 2,	Nanticoke,	Face and hands burned by an explosion of fire-damp.
17.	6	John H. Jones,	Door-tender,	16	S.	..	Hollenback,	Wilkes-Barre,	Arm crushed by falling under cars; fell while unnecessarily trying to jump on the cars.
18.	7	John Briscoe,	Miner,	38	M.	5	Lee colliery,	Newport township,	Two ribs fractured; fell while jumping away from falling clay.
18.	8	August May,	"	42	M.	5	Slope No. 1,	Nanticoke,	Leg broken by a fall of slate; he had tried to pry it down and failed.
22.	9	John Darbyshire,	"	33	M.	2	Parish,	Plymouth,	Leg broken in two places, foot severely mangled, also bruised about shoulders and back while on his way to work on surface; he fell under a loaded car.
23.	10	Edris McEverecan,	"	28	S.	..	Shaft No. 1,	Edwardsdale,	Both burned by an explosion of gas; after intermission they returned to work without testing with safety-lamp, consequently the explosion took place.
23.	11	Thomas Herbert,	"	29	M.	..			
27.	12	John A. Davies,	Door-tender,	15	S.	..	Shaft No. 1, Lee vein,	Nanticoke,	Arm broken; while riding a car his arm caught between the car and a projecting rock.
29.	13	James Harris,	Miner,	46	..	..	"	"	Cut and bruised on body and face; David McIlherney fired a shot without giving proper notice and it burst through the pillar in a heading upon Harris.
Feb. 1.	14	Thomas Lake,	Laborer,	38	M.	8	Nottingham,	Plymouth,	All painfully injured by an explosion of fire-damp; there were eight men killed or fatally injured by the same explosion; Peter Lynn and John Dennis were also severely injured. For full description see another part of this report.
1.	15	David Fox,	Timberman,	41	M.	5			
1.	16	John P. Thomas,	"	42	S.	..			
3.	17	John McAndrew,	Miner,	50	S.	..	Shaft No. 1,	Edwardsdale,	Painfully injured; while barring loose coal it fell down on him.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location. Luzerne county.	Nature and cause of accident.
Feb. —	18	William Daniels.	Laborer.	20	S.		Shaft No. 2.	Plymouth.	Leg broken; a mule fell on him at top of shaft.
11.	19	William Parry.	"	20	S.		Tunnel No. 6.	Glenlyon.	Back and legs painfully injured by a fall of rock.
11.	20	Anthony Bobeski.	"	23	S.		Shaft No. 1, Lee vein.	Nanticoke.	Leg broken and back bruised by a fall of slate and coal.
11.	21	Mike Jeddock.	Dumpman.	23	S.		Lance No. 11	Plymouth.	Leg fractured and ankle dislocated; got under a car on tipple.
12.	22	Joseph Weiss.	Miner.	26	M.		Shaft No 1, Forge vein.	Nanticoke.	The first was severely and the second slightly burned on face and hands by an explosion of gas; the result of carelessness.
12.	23	Frank Graver.	Laborer.	36	M.	4			
13.	24	John Gavolieski.	Driver.	16	S.		Shaft No. 2.	"	Jaw fractured and some teeth knocked out by a kick from a mule.
14.	25	Henry Williams.	Footman.	18	S.		Slope No. 2.	"	Severe cut on calf of leg by being caught between cars at foot of slope.
—	26	George Jones.	"	17	S.		Boston.	Plymouth township.	Both legs fractured and foot crushed; he failed to adjust the latches at bottom of slope and the empty trip taking the wrong road ran upon him.
	27	John Cameron.	Miner.	45	M.	5	Baltimore tunnel.	Wilkes-Barre.	Left shoulder dislocated and back bruised by a fall of top coal.
18.	28	Thomas Barnitzki.	Laborer.	38	M.	4	Shaft No. 4.	Plymouth township.	Leg broken below the knee by a piece of rock falling on him from roof.
20.	29	Felican Sortelic.	"	21	S.		Shaft No. 3.	" "	Spine fractured by a fall of rock from roof.
20.	30	Thomas Worthy.	Driver.	16	S.		Shaft No. 5.	Plymouth.	Thigh and hip badly injured by falling under cars.
21.	31	Alexander Ralston.	Miner.	36	M.	4	Lance No. 11.	"	Face and hands painfully burned by an explosion of gas.
22.	32	Samuel Lympeny.	"	41	M.	4	Shaft No. 2.	Nanticoke.	Leg broken and body painfully bruised; blast fired when he was approaching it, he thinking the squib had missed.
24.	33	John Butler.	"	38	M.	2	Stanton.	Wilkes-Barre.	Small bone of leg fractured; coal which he was pulling down struck him in falling
25.	34	William Castle.	Driver.	21	S.		Baltimore tunnel.	"	Thigh fractured; leg caught between a car and a stopping-block.
Mar. 4.	35	James A. Rogers.	"	21	S.		Lance No. 11.	Plymouth.	Severely kicked by a mule.
5.	36	Thomas Owen.	Rockman.	45	M.	7	Dodson.	"	Leg fractured and body bruised by a premature blast in rock; James Leonard was fatally injured the same time.
7.	37	John Kinney.	Laborer.	38	M.	4	Shaft No. 9.	Sugar Notch.	Foot severely crushed by a fall of rock.
9.	38	Paul Kost.	Door-tender.	17	S.		Shaft No. 6.	Glenlyon.	Trying to get on the front end of a trip of cars, he fell and had one rib fractured.

	13.	39	John Petroshki,	Miner,	36	M.	2	Shaft No. 6,	Severely injured by a fall of rock.
	14.	40	John Connell,	"	25	S.		Shaft No. 4, Plymouth,	Thigh broken by a fall of coal.
	18.	41	Stanis. Macovick,	Laborer,	26	S.		Slope No. 1, Nanticoke,	Leg broken by a piece of coal thrown by a shot; he was a distance of ninety feet from the blast.
	21.	42	Patrick Sweeney,	"	21	S.		Lance No. 11, Plymouth,	Painfully bruised by a car jamming him against a prop.
	21.	43	Gilbert Gould,	Miner,	29	M.	1	Slope No. 4, Nanticoke,	Arm and collar-bone fractured by a premature blast.
	22.	44	Thomas Williams,	Sinker,	35	M.	4	Franklin, Wilkes-Barre,	Back painfully hurt; struck by a drill which fell from top of shaft.
	25.	45	Alexander Malah,	Miner,	25	S.		Shaft No. 2, Nanticoke,	Leg broken by a blast; he cut the match too short to give him time to get away far enough.
	28.	46	William Johns,	"	38	M.		Woodward, Plymouth township,	Ankle dislocated by falling from a scaffold while taking down top rock.
	29.	47	George Markey,	Laborer,	28	S.		Shaft No. 1, Edwardsdale,	When miner was igniting a second squib to fire a blast, gas igniting the squib and set the blast off before he and the laborer had moved; the miner was fatally injured and Markey was severely injured.
	29.	48	Joseph Norris,	Miner,	30	S.		Slope No. 4, Nanticoke,	Thigh broken and wrist bruised by a fall of coal.
April	2.	49	John J. Griffiths,	Bratticeman,	24	M.	1	Slope No. 4, "	John J. Griffith thigh broken and slightly burned; George Elmy, painfully bruised, and John Ruddick, face and hands severely burned, by an explosion of fire-damp which was being removed from a breast and came in contact with a naked light; five men were either killed or fatally injured by same explosion. See report.
	2.	50	George Elmy,	Fire-boss,	50	M.			
	2.	51	John Ruddick,	Miner,	37	M.	4		
	5.	52	Frank Krouse,	Driver,	16	S.		Gaylord, Plymouth,	Left leg broken; a car jumped the track and ran upon him.
	5.	53	Domin'k Kershoolish,	Miner,	38	M.		" "	Hip dislocated; he was prying coal down which struck him.
	7.	54	Frederick Sprow,	Laborer,	48	M.	6	Dorrance, Wilkes-Barre,	Small bone in leg broken by coal rolling against it.
	8.	55	Lucas Yerki,	Miner,	25	S.		Shaft No. 2, Nanticoke,	Spine injured slightly by a fall of coal; he had tried to pull it down and failed.
	17.	56	Steca Solonski,	Laborer	25	S.		Shaft No. 3, Edwardsdale,	Compound fracture of leg; caused by a fall of rock
	17.	57	Felix Lawiski,	"	30	M.	2	Lance No. 11, Plymouth,	Leg broken; caused by a lump of coal rolling upon it.
	19.	58	David Blythe,	Miner,	27	M.	1	Slope No. 4, Nanticoke,	Face and hands slightly burned by an explosion of fire-damp; he failed to take ordinary precautions while driving a cross-heading.
	19.	59	John Krauser,	Laborer,	25	S.			
	19.	60	Stote Frace,	Driver,	16	S.		Breaker No. 2, "	Leg badly lacerated by a car running over it.
	19.	61	Stanley Ginectil,	Laborer,	36	M.	1	Shaft No. 2, "	Pelvis fractured by a piece of rock falling on him from between props.
	20.	62	Anthony Kane,	Miner,	36	M.	4	Maffet, Sugar Notch,	Arm crushed by a fall of coal, necessitating amputation.
	25.	63	Michael Sekoski,	Laborer,	25	S.		Nottingham, Plymouth,	Leg broken by being caught by a car while putting it on track.
	25.	64	Edward G. Davies,	Miner,	40	M.	4	Red Ash No. 2, Wilkes-Barre twp.,	Back painfully bruised by a fall of bony coal.
	26.	65	Joseph Graloc,	Laborer,	35	M.	3	Tunnel No. 4, Nanticoke,	Severely cut on leg by a lump of coal rolling upon him.
May	1.	66	James Puterbaugh,	Miner,	47	M.	4	Avondale, Plymouth township,	Severely injured; block slipped and car ran upon him.
	1.	67	Robert Hamilton,	Door-tender,	15	S.		Lance No. 11, Plymouth,	Knee painfully hurt by being jammed between cars when coupling them.
	1.	68	Michael Curtis,	Laborer,	29	M.		Nottingham, "	Painfully injured about the hips; a prop fell on him while putting it up.
	2.	69	Charles Gusart,	"	26	S.		Baltimore tunnel, Wilkes-Barre,	Arm severely crushed; mules pulled a truck off the track upon him.
	3.	70	John Gilday,	Miner,	44	M.	7	Jersey No. 8, Ashley,	Right leg fractured by a fall of coal.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location. Luzerne county.	Nature and cause of accident.
May 5.	71	James Kearney.	Driver.	20	S.		Nottingham.	Plymouth.	Kicked on face by a mule; face was badly bruised.
5.	72	Napol'n De Montague.	Miner.	37	M.	6	Lance No. 11.	"	Collar-bone fractured; a blast fired before he got out of the way.
6.	73	John T. Williams.	Footman.	26	M.	1	Empire.	Wilkes-Barre.	Leg broken; car tipped upon him at bottom of slope.
7.	74	William Collett.	"	32	M.	3	Stanton.	"	Arm broken by being caught between cars while coupling them.
9.	75	Anthony Stortz.	Miner.	27	M.	2	Shaft No. 2.	Nanticoke.	Both legs broken; struck by a piece of coal thrown from a blast.
10.	76	Dennis McNeil.	"	30	S.		Jersey No. 8.	Ashley.	Face and hands slightly burned by an explosion of gas.
14.	77	Henry Phillips.	Laborer.	23	S.		Shaft No. 1, Lee vein.	Nanticoke.	Back and hips severely injured and leg broken by a fall of coal.
15.	78	Michael Marslick.	"	25	S.		West End.	Mocanaqua.	Hips painfully injured by a fall of bony coal.
15.	79	Robert W. Roberts.	Miner.	38	M.		Jersey No. 8.	Ashley.	Both were painfully injured and burned by an explosion of gas while confined in the mine by a cave-in; twenty-six persons lost their lives by the same explosion. See report.
15.	80	Anthony Frayne.	"	34	M.				
20.	81	John Gannon.	Footman.	30	S.		Stanton.	Wilkes-Barre.	Hand badly injured by being struck by a piece of coal which fell down the shaft.
20.	82	Rees P. Griffith.	Miner	43	M.	1	"	"	Head cut, collar-bone broken and knee hurt by a fall of coal.
24.	83	Martin Planigan.	Footman.	23	S.		Shaft No. 3.	Edwardsville.	Leg and arm broken and back slightly hurt by falling under cars.
27.	84	Robert J. Owen.	Miner.	60	M.		Stanton.	Wilkes-Barre.	Leg fractured by a fall of coal.
29.	85	Robert Pickwell.	"	43	M.	5	Wanamie.	Wanamie.	Piece of top slate fell on his foot necessitating amputation of foot.
June 5.	86	John Smith.	Driver.	21	S.		Shaft No. 9.	Sugar Notch.	Arm broken and back slightly injured by falling under cars.
7.	87	Evan Lewis.	"	19	S.		Lance No. 11.	Plymouth.	Face cut and bruised by being kicked by a mule.
9.	88	John Millroy.	"	17	S.		Woodward.	Plymouth township.	Skull fractured; he was found lying on the track, but it is not known how he was injured.
10.	89	Anthony Garokuski.	Laborer.	28	S.		Avondale.	" "	Leg broken by being caught between bar and side of gangway.
10.	90	Ludwig Gonda.	"	31	S.		Tunnel No. 6.	Glenlyon.	Severely burned by an explosion of powder, caused by ramming a tight charge in a hole.
11.	91	Phillip Bonell.	Miner.	32	M.	4	Shaft No. 3.	Plymouth.	Leg broken by a fall of top coal.
17.	92	Andrew Barnes.	Laborer.	30	S.		Nottingham.	"	He exploded a keg of powder and was severely burned.

	19,	93	Louis Sheridan,	Oiler,	16	S.		Avondale,	Plymouth township,	Collar-bone broken and cut about face by being caught between a car and the rib.
	24,	94	William A. Wompole,	Miner,	39	M.	5	Alden,	Alden,	Thigh broken and cut on face and arm by a premature blast.
	24,	95	Thomas Welch,	"	34	M.	2	Avondale,	Plymouth township,	Severely hurt by a fall of rock while he was in the act of pulling down. Died July 31.
	24,	96	George Wanko,	Driver,	17	S.		Shaft No. 6,	Glenlyon,	Was riding up a breast on front end of car, the mule stepping on one end of a drill causing the other end to fly up and penetrate his thigh, causing a painful wound.
	24,	97	Samuel Ryder,	Miner,	24	S.		Red Ash No. 1,	Wilkes-Barre twp.,	Leg severely bruised by a fall of rock.
	28,	98	Samuel Williams,	"	32	M.		Woodward,	Plymouth township,	Shoulder and leg injured by a fall of roof.
July	1,	99	Frank Pocolko,	"	26	M.		Shaft No. 9,	Sugar Notch,	Burned by an explosion of gas; he brushed gas upon his lamp.
	3,	100	John Mainwaring,	"	63	M.		Nottingham,	Plymouth,	Cut and bruised about head and body by a fall of slate.
	5,	101	John D. Frace,	Engineer,	42	M.	4	Shaft No. 9,	Sugar Notch,	Two fingers cut off; the crank-pin caught them when he was cleaning the engine.
	9,	102	Henry Peterman,	Footman,	16	S.		Lee breaker,	Newport township,	Shoulder broken by being struck by a board thrown down from top of breaker.
	11,	103	John Briscoe,	Runner,	18	S.		"	" "	Leg broken near ankle by being struck by a piece of coal flying from a blast.
	14,	104	James Makowewich,	Loader,	28	S.		Breaker No. 2,	Nanticoke,	Injured about hips by being crushed between car and breaker.
	14,	105	James Merrifield,	Miner,	37	M.	5	Stanton,	Wilkes-Barre,	James Merrifield, thigh fractured, and John Welsh, thigh fractured and knee badly hurt; both were on the rear end of a train of cars waiting for a ride, when another car came and jammed them.
	14,	106	John Welch,	Laborer,	25	S.				
	15,	107	Mike Smith,	Miner,	27	M.	2	Gaylord,	Plymouth,	Burned on face and body; he fired a cartridge full of powder.
	24,	108	William Shinski,	Laborer,	24	S.		Parrish,	"	Cut on head and bruised about chest by being thrown from a runaway car on slope.
	25,	109	Daniel O. Thomas,	Miner,	46	M.	8	Red Ash No. 1,	Wilkes-Barre twp.,	Painfully hurt by being struck by flying coal thrown from a blast.
	30,	110	Patrick Flynn,	"	34	M.		Shaft No. 4,	Edwardsdale,	Arm broken by a fall of rock.
Aug.	7,	111	Joseph Rogers,	Laborer,	30	S.		Lance No. 11,	Plymouth,	Squeezed about hips by being caught between a car and rib.
	12,	112	Fred. Homeman,	"	52	M.	5	Franklin,	Wilkes-Barre,	Back severely bruised by a fall of coal; Robert Edwards had his foot slightly injured by the same fall.
	12,	113	Thomas Weaver,	Driver,	17	S.		"	"	Wrist severely wounded by being jammed between cars.
	15,	114	John Applestone,	Miner,	53	M.		Alden,	Alden,	Leg crushed, necessitating amputation: a piece of rock slid down a pitch of forty-five degrees upon him.
	19,	115	Benjamin Collett,	Miner,	38	M.	4	South Wilkes-Barre, No. 5.	Wilkes-Barre,	Both painfully burned by an explosion of gas caused by brushing the gas down on their naked lights.
	19,	116	Benjamin Price,	Laborer,	24	S.				
	20,	117	Thomas Parfit,	Timberman,	30	M.	2	Slope No. 4,	Nanticoke,	Painfully injured. They were standing on the slope at night while a trip of loaded cars was being hoisted; the rope broke, leaving the cars back, and they were hurt by the flying *debris*. Michael Zaperko was killed by same "runaway."
	20,	118	Elias Griffiths,	Bratticeman,	33	M.	3			
	20,	119	Michael Martin,	Miner,		M.		Empire,	Wilkes-Barre,	Leg and back injured by a premature blast: he ignited the squib instead of match.
	20,	120	Andrew Judick,	Laborer,	26	S.		Shaft No. 3,	Plymouth,	Leg broken by a fall of rock.
	22,	121	Benjamin Saunders,	Miner,	36	S.		Shaft No 1,	Edwardsdale,	Hands and face burned by an explosion of gas.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Number of children.	Name of colliery.	Location—Luzerne county.	Nature and cause of accident.
Aug. 25,	122	John D. Lewis,	Miner,	49	M.	6	Stanton,	Wilkes-Barre,	Face and hands painfully burned by an explosion of gas.
27,	123	William H. Lewis,	"	32	M.	1	Shaft No. 2,	Edwardsdale,	Severely injured about face, arm and body; while prying coal and slate down it fell on him.
27,	124	Thomas Rule,	"	30	M.	4	Wanamie No. 18,	Wanamie,	Collar bone fractured by a fall of coal.
29,	125	George L. Morgan,	"	32	M.	3	Shaft No. 6,	Glenlyon,	Cut severely on head by a piece of top coal falling on him.
30,	126	Ivos Jones,	Laborer,	40	M.	5	Empire,	Wilkes-Barre,	Leg broken by a fall of slate from roof
Sept. 4,	127	Stanis. Kasmearski	Miner,	50	M.	4	Shaft No. 6,	Glenlyon,	Face and hands slightly burned. He entered his place immediately after blasting, and exploded a small quantity of gas.
4,	128	John Armstrong,	Mine foreman,	40	M.	3	Shaft No. 4,	Edwardsdale,	Severely burned by an explosion of gas; fired it unexpectedly on top of a fall in a breast.
5,	129	William Speight,	Runner,	23	S.		Lance No. 11,	Plymouth,	Severely wounded on thigh by a car running upon him.
6,	130	Jacob Relzit,	Laborer,	42	M.	5	Nottingham,	Plymouth,	Both legs broken; a car jumped the track and ran upon him.
9,	131	George Sawage,	Miner,	27	S.		Conyngham,	Wilkes-Barre,	Face and hands burned by an explosion of gas.
9,	132	John Solomonson,	"	36	M.	2	Dorrance,	"	Face and hands burned by an explosion of gas. He went in after blasting without examination.
10,	133	Morgan M. Jones,	"	50	W.	6	Shaft No. 6,	Glenlyon,	Head and back severely injured by a premature blast; cut his match too short.
12,	134	Isaac Jones,	"	42	M.	3	Shaft No. 3,	South Wilkes-Barre,	Painfully injured by an explosion of gas in the shaft. George Ford was killed by same explosion.
13,	135	Chris. Boland,	Laborer,	45	S.		Avondale,	Plymouth township,	Back and shoulders severely injured by being run over by cars.
13,	136	Thomas W. Thomas,	Miner,	35	S.		Tunnel No. 6,	Glenlyon,	Leg broken; a piece of coal sliding jammed it against a rail.
17,	137	Joseph Strough,	"	34	M.	3	Lance No. 11,	Plymouth,	Severe flesh wound caused by a blast, he having cut the match too short.
17,	138	William D. Williams,	"	34	W.	2	"	"	Wounded by a fall of rock from rib.
18,	139	Ignatius Visnefski,	Driver,	16	S.		Slope No. 3,	West Nanticoke,	Leg broken by a fall of rock while helping a laborer to load a car.

	20.	140	Ed. Buttson,	Laborer,	32	M	5	Hollenback,	Wilkes-Barre,	Painfully injured by an explosion of gas. There were four persons killed by same explosion.
	22.	141	Thomas Thomas,	Driver,		S.		Nottingham,	Plymouth,	Severely injured about loins and head by falling under cars.
	23.	142	Michael Sudig,	Laborer,	21	S.		Alden,	Alden,	Leg broken by a fall of rock from top.
	23.	143	John Kivra,	Blacksmith,	49	M.	6	"	"	Leg broken by landing a piece of rock swung in shaft.
	25.	144	John Harkins,	Laborer,	28	M.	1	Shaft No. 9,	Sugar Notch,	Face and hands burned by an explosion of gas. He forgot the gas was there and raised the naked lamp into it.
	25.	145	Daniel Smith,	Miner,	30	M.	1	Shaft No. 3,	Edwardsdale,	Leg broken; while pulling loose rock down it fell on him.
	25.	146	Frank Kennedy,	"	24	S.		Shaft No. 5,	South Wilkes-Barre,	Leg broken; a piece of timber fell on him.
	26.	147	Samuel Bevan,	"		M.		Empire,	Wilkes-Barre,	Two small bones in his foot fractured; was prying down coal and it struck him.
	26.	148	Joseph Kiselewicz,	Laborer,	25	S.		Shaft No. 6,	Glenlyon,	Face and hands painfully burned by an explosion of gas. He entered his breast after being cautioned not to enter, and fired an accumulation of gas.
Oct.	2.	149	Henry Wolf,	Miner,	28	M.	1	Nottingham,	Plymouth,	Arm broken and side bruised by a premature blast.
	2.	150	Frank McEverecan,	"	30	S.		Shaft No. 1,	Edwardsdale,	Face and hands painfully burned by an explosion of gas.
	3.	151	John Hoho,	Laborer,		M.	1	Shaft No. 3,	Plymouth,	Both legs broken by a fall of rider coal.
	3.	152	Anthony Rowley,	"	25	S.		Franklin,	Wilkes-Barre,	Severe wounds on head and neck by being struck by flying coal from a runaway trip on slope.
	6.	153	John Barnett,	Doortender,	16	S.		Slope No. 2,	Nanticoke,	Leg broken; caught between a door and a car.
	8.	154	Jacob Bedner,	Miner,	25	S.		Gaylord shaft,	Plymouth,	Painfully injured by an explosion of gas. Charles Armstrong and Robert Wilson lost their lives at the same explosion.
	9.	155	Patrick Moran,	"	53	M.	7	Nottingham,	"	Leg injured by a piece of coal falling on him while he was working out a shot.
	11.	156	Edwin Howells,	Runner,	25	M.	1	Slope No. 4,	Nanticoke,	Arm broken and leg bruised by runaway cars on slope.
	11.	157	William Dobson,	Miner,	49	M.	6	Franklin,	Wilkes-Barre,	Severely cut on face and body by a premature blast. He cut the match too short.
	14.	158	John James,	Driver,	18	S.		Dodson,	Plymouth,	Squeezed and badly cut on arm by falling under cars.
	15.	159	Daniel Powell,	Miner,	33	M.	5	Slope No. 4,	Nanticoke,	All more or less severely burned by an explosion of gas. Powell fired a blast which tapped a strong feeder of gas, and Yess, on crossing through Powell's breast, ignited it and caused an explosion, injuring all more or less severely. They ought to have examined the place with a safety-lamp before entering with a naked light.
	15.	160	Matthew Nash,	"	31	M.				
	15.	161	Charles Yess,	Bratticeman,	32	M.	3			
	15.	162	Stanley Cune,	Laborer,	27	S.				
	16.	163	Francis Caffrey,	"	25	S.		Maffet,	Sugar Notch,	Neck injured; was half strangled by a piece of rock falling and jamming his neck.
	17.	164	Thomas Mullen,	Miner,	42	M.	5	Balt. tunnel,	Wilkes-Barre,	Arm broken; while helping to put car on track he was caught between the car and rib.
	17.	165	John Rufskofski,	"	26	S.		Lance No. 11,	Plymouth,	Face and hands severely burned by an explosion of gas.
	18.	166	William J. Buckley,	Driver,	14	S.		Stock Ground,	Nanticoke,	Fingers badly lacerated; while unhitching a mule he fell under a car.
	21.	167	William F. Thomas,	"	16	S.		Dodson,	Plymouth,	Leg broken at ankle. Head-block gave way and struck him when car ran against it.
	22.	168	David O. Davies,	Doortender,	60	S.		Nottingham,	"	Leg broken. He partly opened the door when a car ran against him.
	23.	169	Robert Williams,	Miner,	34	M.		Shaft No. 9,	Sugar Notch,	Jaw fractured and severely cut on head. A blast fired when he was returning, thinking the squib had "missed."

TABLE V—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location—Luzerne county.	Nature and cause of accident.
Oct. 24.	170	Charles J. Dare.	Miner.	30	M.	3	Shaft No. 1.	Edwardsdale.	Shoulder dislocated and cut on face by a premature blast.
24.	171	John Edwards.	Driver.	15	S.		Nottingham.	Plymouth.	Foot severely crushed by being caught in frog and car running over it.
25.	172	Fred Peters.	Miner.	40	M.	5	Slope No. 2.	Nanticoke.	The three were more or less severely burned by an explosion of gas. After resting to eat a lunch they went to work loading a car, having naked lights. Gas had accumulated over their heads, and a piece of top coal fell and brought the gas in contact with their lights.
25.	173	John Selifski.	Laborer.	35	M.	1			
25.	174	Ignatz Mackovitz.	"	26	S.				
27.	175	David P. Jones.	Miner.	35			Warrior Run.	Warrior Run.	Fell from a scaffold on a griscom pump, and his arm was severed by the crank.
27.	176	Arthur Weathers.	Laborer.	29	S		Empire.	Wilkes-Barre.	Ankle fractured by a fall of slate from top.
28.	177	John Stoshen.	Miner.	33	M.	3	Nottingham.	Plymouth.	Cuts on face and hands. When pulling slate down it struck him.
30.	178	David T. Evans.	Tracklayer.	45	M.	2	"	"	Foot cut and bruised by a piece of coal falling on it.
Nov. 1.	179	John Greike.	Miner.	30	S.		Lance No. 11.	"	Painful bruises on body by a fall of rock.
3.	180	W. W. Kaiser.	Chute boss.	35	M.	3	Breaker No. 9.	Sugar Notch.	Thumb crushed so that amputation was necessary by being caught in bevel gearing. [leg.
3.	181	John E. Evans.	Driver.	16	S.		Empire.	Wilkes-Barre.	Leg fractured. He fell and a mule stepped on his
7.	182	William R. Jones.	Miner.	33	M.	4	Woodward.	Plymouth township.	Painfully injured on head, side and arm by a premature blast.
11.	183	Maryan Repeuski.	Laborer.	35	M.		Shaft No. 2.	Nanticoke.	Back injured and leg fractured by a fall of top rock.
18.	184	Condy Cannon.	Miner.	37	M.	3	Hillman vein.	Wilkes-Barre.	Leg painfully injured by a fall of fire-clay while he was pulling the rock down.
19.	185	Mich. Gubanyes.	"	40	M.	4	Shaft No. 3.	Plymouth.	Back and leg injured by a fall of rock while he was prying the rock down.
19.	186	John Basham.	"	30	M.	3	Red Ash No. 1.	Wilkes-Barre twp.	While barring down coal a piece of top rock fell on him, bruising his chest and slightly injuring spine.
19.	187	Daniel J. Morgan.	Driver.	19	S.		Red Ash No. 2.	"	When in the act of hitching the mule to a chain to pull a car on to face of breast, a long, narrow piece of rock fell on him from the top, causing severe injuries.
19.	188	Anthony Livingstone.	Laborer.	26	S.		Shaft No. 2.	Plymouth.	Hip painfully squeezed and bruised by being caught between a car and rib.
20.	189	Fred. Beckman.	Miner.	45	M.	2	Colliery No. 19.	Wanamie.	Three ribs, nose and chin fractured and body bruised. A piece of coal which he was working loose fell on him.
21.	190	Gilbert Young.	"	27	M.	2	Stanton.	Wilkes-Barre.	Face and hands burned. He went up to chute with a naked light and fired gas known to be there. He thought he might go this far without danger.

22.	191	Felix Vasholofski, . .	Doortender, .	15	S.	. .	Shaft No. 2, ...	Nanticoke, ...	Painfully injured by being struck by coal flying from runaway car at bottom of the slope.
24.	192	Thomas Rundle, . . .	Miner, ...	33	M.	4	Alden, ...	Alden, ...	Face and hands burned. Upon firing a shot he went on to face and fired a body of gas.
25.	193	Evan Davies, ...	Laborer, . . .	26	S.	. .	Shaft No. 1.	Edwardsdale. . . .	While riding up slope on a loaded car he struck against something and fell off, and was painfully bruised and cut.
26.	194	William Walters. . .	Miner, ...	31	M.	. .	Dodson, ...	Plymouth.	Severe scalp-wound and slight fracture of skull, caused by a fall of coal.
26.	195	Isaac James, ...	Laborer, . . .	35	S.	. .	Hillman vein, ...	Wilkes-Barre. . . .	Leg painfully bruised by a car running upon him.
26.	196	Anthony Dudice. . .	" . . .	25	S.	. .	Parrish.	Plymouth.	Arm fractured by being caught between car and wall.
28.	197	Thomas Dudlick, . . .	Miner, ...	60	M.	2	Hollenback, ...	Wilkes-Barre. . . .	Shoulder fractured. A small piece of coal falling from rib struck him. [gas.
Dec. 4.	198	Fred. Westfield. . . .	"	45	M.	. .	"	"	Face and hands slightly burned by an explosion of
8.	199	Josh. Lamereaux. . .	"	43	M.	. .	Dodson.	Plymouth.	Severe cut on side by a premature blast; shot fired just as he was lighting the match.
13.	200	James Rourke.	"	35	M.	7	Parrish.	"	Leg broken by being struck by a lever while putting car on the track.
13.	201	Albert Ely.	Driver, . . .	17	S.	. .	Nottingham.	"	Leg fractured and side painfully bruised by falling under cars.
17.	202	Martin Podock. . . .	Laborer, . . .	30	M.	3	Shaft No. 2.	Nanticoke.	Arm broken. A piece of top coal fell and caused him to fall off the bottom bench.
18.	203	Henry C. Jones. . . .	Miner, ...	39	M.	6	Shaft No. 9.	Sugar Notch.	Jones' hands and Williams' face and hands were severely burned by an explosion of gas.
18.	204	John Williams. . . .	Laborer, . . .	23	. .	. .			
18.	205	Mark Woods.	Runner. . . .	24	S.	. .	Franklin.	Wilkes-Barre. . . .	Thumb cut off. It slipped into the wheel when he was spragging a car.
23.	206	Samuel DeHaven. . .	Miner, ...	35	. .	. .	Warrior Run, ...	Hanover township. .	Was caught between car and roof when riding up slope; injury not serious.
24.	207	Alex. Laurence. . . .	"	23	. .	. .	Alden.	Alden.	Painfully injured by a bucket falling back into the shaft when he was working at the bottom of shaft.
27.	208	John Briggs, ...	Laborer, . . .	24	S.	. .	Wanamie No. 19. . . .	Wanamie.	Slightly burned by an explosion of gas in an abandoned breast.

Recapitulation.

Occupation.	Number.	Per cent.
Miners.	97	46.6
Laborers.	54	26
Drivers and runners. . . .	25	12
Door-tenders.	7	3.4
Head and footmen.	7	3.4
Fire-bosses and bosses. . .	3	1.4
Brattice and timbermen. .	6	2.9
Tracklayers, ...	1	0.5
Rockmen.	3	1.4
Breaker men, ...	3	1.4
Engineers.	1	0.5
Oilers.	1	0.5
Total.	208	100

Nationality.	Number.	Per cent.
Welsh, ...	55	26.4
Irish.	28	13.5
English.	37	17.8
American.	18	8.6
Polish.	50	24
Hungarian.	7	3.4
German.	8	3.8
Swedish, ...	1	0.5
Scotch.	2	1
French.	1	0.5
Canadian.	1	0.5
Total.	208	100

Causes of Accidents.	Number.	Per cent.
By explosions of gas.	48	23
By falls of roof and coal.	60	28.8
By falling down shafts.	. . . . .	. . . . .
By mine cars underground.	46	22.1
By explosions of powder and blasts.	25	12
By miscellaneous causes under ground.	19	9.1
By miscellaneous causes on surface.	10	5
Total.	208	100

There were 63 slight injuries reported which were not included in the above list, adding which would make the total number of injuries equal 271.

FOURTH ANTHRACITE DISTRICT.

(THAT PART OF LUZERNE LYING SOUTH OF THE WYOMING COAL FIELD TOGETHER WITH CARBON COUNTY.)

OFFICE OF INSPECTOR OF MINES,
HAZELTON, PA.

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor herewith of presenting my first annual report as inspector of coal mines for the Fourth district of the Anthracite coal fields, for the year 1890.

The production of coal during this year is the largest ever shown by this district, being 5,776,699.08 tons, which is an increase over last year of 121,503.09 tons and an increase of 109,932.08 tons over the production of 1883, which is the year showing the largest production prior to this.

The number of fatal accidents during the year was fifty-two, leaving twenty-four widows and fifty-two orphan children to mourn the loss of husband and father.

The number of non-fatal accidents was one hundred and thirty-four. I am sorry to say that this is an increase over last year of six fatal, and of eight non-fatal accidents. And while the number of widows left during this year is two less than last year, the number of orphans is sixteen greater than last year.

As my predecessor, David Jonathan, Esq., died during his term of office, I have embodied in this report an obituary notice of him taken from the "*Colliery Engineer*" for August, 1890. The report contains besides the usual tables, some remarks on the fatal accidents and references to the colliery improvements made during the year; also a brief description of the new state hospital at Hazleton, which was finished and furnished during this year.

By reference to the tables it will be seen that we have had a fatal accident for every 111,090 tons of coal mined, and a non-fatal accident for every 43,110 tons of coal mined, and an accident either fatal or non-fatal

for every 31,057 tons of coal mined. Also a life lost for every 277 persons employed in the district. A non-fatal accident for every 108 persons employed, and an accident either fatal or non-fatal for every 78 persons employed. Which very forcibly illustrates how costly in presious human life the mining of coal is.

Owing to the failure of the board of examiners of Schuylkill county, to agree to change the limits or boundary lines of the Fourth, Fifth, and Seventh districts respectively, so as to conform to limits reported for by the respective inspectors of these districts for the years 1888 and 1889, it was decided by Samuel Gay, Esq., inspector of the Seventh district; William Stein, Esq., inspector of the Fifth district, and myself to return to the old boundaries, and so make our reports for this year.

Respectfully submitted.

JOHN M. LEWIS,
Inspector of Mines.

THE LATE DAVID JONATHAN.

David Jonathan, late inspector of the Fourth Anthracite district of Pennsylvania, was born at Bryn Mawr, South Wales, in 1841, and began to work in the rolling mills of Nantyglo, at an early age. Finding that he could earn more in the mines, his father took him to work in the coal mines with him.

In 1862, when twenty-one years of age, he left home and went to work in the coal mines of Aberaman. Four years later, in company with David Price, now of Ashland, Pa., and William Thomas, now of Lansford, Pa., he emigrated to America, first settling at Pottsville, Pa. He stayed there but three weeks working in the Fishbach rolling mill and then came to Scranton, Pa., where he secured work in the Delaware, Lackawanna and Western Company's Diamond mine. He remained here but a few weeks and then removed to Wilkes-Barre, where he secured work as a miner under Lewis S. Jones, at the old Kidder slope. In 1871 he was promoted to the position of fire-boss, and held this position until 1875, when he was placed in charge of the No. 10 colliery of the Lehigh and Wilkes-Barre Coal Company at Sugar Notch.

At the time of the great fire in the Empire colliery, which started on December 31, 1873, he was placed in charge of one of the shifts and for three months led his men in their strenuous efforts to conquer the fire. When it was finally decided to isolate the fire by walting around it, and by introducing steam, he was placed in charge of the work under the direction of the foreman, Lewis S. Jones This work was finished near the close of 1874, and early in 1875 he was promoted, as before stated, to

the position of inside foreman at No. 10 colliery. In 1876 he succeeded Hon. Morgan B. Williams, as mine foreman of the Diamond mine of the Lehigh and Wilkes-Barre Coal Company. This was an exceedingly gaseous mine and Mr. Jonathan soon had abundant opportunities to prove himself an excellent foreman, careful and competent in all emergencies. The mine caved twice, owing to causes not under his control, and the whole mine filled with fire-damp in both instances. He succeeded in restoring ventilation and in re-opening the mine both times without an accident. As a mine foreman he was a man of but few words. His disposition was a kind one, and he always retained the respect and good will of both his superior officers and his employes. He was of a studious nature. He never learned anything without hard study, but what he learned either from books or experience he never forgot. He was positive in his manner, and when he decided a matter in his own mind nothing could change him.

In 1886 he accepted the position of assistant superintendent of the Susquehanna Coal Company's mines at Nanticoke and Glen Lyon. He held this position until June, 1889, when, after a competitive examination, he was appointed inspector of mines of the Fourth Anthracite district, vice James E. Roderick, resigned. He had held this position but little over a year when he died, July 1, 1890, of a stroke of paralysis. Mr. Jonathan was married twice, and was the father of eleven children, all of whom with his second wife survive him.

He was a kind and indulgent husband and father, always endeavoring to make his home a bright and pleasant one, and that he succeeded is evidenced by the affection that existed between him and his family and the high regard in which he was held by his neighbors.

His remains were interred in the beautiful Hollenback cemetery at Wilkes-Barre on July 3, and were followed to the grave by a large number of friends and relatives who mourned the loss of an exceptionally good man.

Total Quantity of Coal Mined During the Year 1890.

A. Pardee & Co.,	546, 657.17
Coxe Brothers & Co.,	1, 392, 112.10
Lehigh Coal and Navigation Company,	710, 481.08
G. B. Markle & Co.,	485, 718.09
Linderman & Skeer,	439, 984.00
Upper Lehigh Coal Company,	463, 628.12
J. C. Haydon & Co.,	332, 786.05
Pardee Brothers & Co.,	183, 478.16
Miscellaneous coal companies,	1, 221, 851.11
Total tonnage,	5, 776, 699.08

NUMBER OF FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER LIFE LOST.

NAMES OF THE OPERATORS.	Number of lives lost.	Tons of coal produced per life lost.
A. Pardee & Co.,	10	54,657
Coxe Brothers & Co.,	13	107,085
Lehigh Coal and Navigation Company,	7	101,497
G. B. Markle & Co.,	1	485,718
Linderman & Skeer,	4	109,996
Upper Lehigh Coal Company,	2	231,814
J. C. Haydon & Co.,	3	110,927
Pardee Brothers & Co.,	1	183,478
Miscellaneous companies,	11	111,077
Total for all companies,	*52	111,090

* Widows 24; orphans, 58.

NUMBER OF NON-FATAL ACCIDENTS AND TONS OF COAL PRODUCED PER PERSON INJURED.

NAMES OF THE OPERATORS.	Number of persons injured.	Tons of coal produced per person injured.
A. Pardee & Co.,	39	14,018
Coxe Brothers & Co.,	29	48,004
Lehigh Coal and Navigation Company,	7	101,497
G. B. Markle & Co.,	15	32,381
Linderman & Skeer,	8	54,998
Upper Lehigh Coal Company,	5	92,725
J. C. Haydon & Co.,	3	110,927
Pardee Brothers & Co.,	8	22,935
Miscellaneous companies,	20	61,092
Total for all companies,	134	43,110

NUMBER OF SERIOUS AND FATAL ACCIDENTS AND TONS OF COAL MINED PER EACH PERSON KILLED OR INJURED.

NAMES OF THE OPERATORS.	Number of persons killed or injured.	Tons of coal mined per person killed or injured.
A. Pardee & Co.,	49	11,156
Coxe Brothers & Co.,	42	33,145
Lehigh Coal and Navigation Company,	14	50,748
G. B. Markle & Co.,	16	30,357
Linderman & Skeer,	12	36,665
Upper Lehigh Coal Co.,	7	66,261
J. C. Haydon & Co.,	6	55,464
Pardee Brothers & Co.,	9	20,386
Miscellaneous companies,	33	37,026
Total for all the Companies,	186	31,057

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

CAUSES OF ACCIDENTS.	Killed.	Injured.	Total.
By explosions of carbureted hydrogen gas,	1	14	15
By falls of coal, roof and sides,	19	41	60
By cars inside and outside,	19	38	56
By machinery inside and outside,	7	14	21
By blasts and explosions of powder,	1	9	10
By miscellaneous causes inside,	1	8	9
By miscellaneous causes on surface,	4	10	14
Totals,	52	134	186

NATIONALITY OF PERSONS KILLED OR INJURED.

NATURE OF ACCIDENT.	American.	Irish.	Hungarian.	German.	Polish.	Italian.	Welsh.	English.	Austrian.	Danish.	Greek.	Russian.	Swede.	Totals.
Killed or fatally injured,	8	10	11	5	7	4	2	2	1	1	1	.	. .	52
Injured,	32	26	19	21	13	11	5	2	3	. .	. .	1	1	134
Total,	40	36	30	26	20	15	7	4	4	1	1	1	1	186

TABLE *showing number of days worked at the breakers, number of persons employed, tons of coal mined per employe, tons of coal per person injured and killed, persons killed, number injured, tons of coal mined per person injured, tons of coal mined per person killed, ratio of employes to fatal and serious accidents, tons of coal mined during 1890, number of kegs of powder used in mining, and number of mine locomotives used at the collieries of this district in 1890.*

NAMES OF COMPANIES.	Number of days worked by breaker.	Number of persons employed.	Tons of coal mined per employe.	Tons of coal mined per person killed or injured.	Number of persons killed.	Number of persons injured.	Tons of coal mined per person injured.	Tons of coal mined per person killed.	Ratio of employes to each person killed or injured.	Number of tons of coal mined during year 1890.	Number of kegs of powder used in the mines.	Number of mine locomotives used at the collieries.
A. Pardee & Co.	193.4	1,633	334.15	11,156	10	39	14,018	54,657	33.3	546,657.17	11,391	7
Coxe Brothers & Co.	291.3	2,950	471.18	33,145	13	29	48,004	107,085	70.2	1,392,112.10	26,810	14
Lehigh Coal and Navigation Company	249.6	1,768	401.17	50,748	7	7	101,497	101,497	126.3	710,481.08	5,520	13
G. B. Markle & Co.	245	1,117	434.16	30,357	1	15	32,381	485,718	69.8	485,718.09	8,695	5
Linderman & Skeer	235.8	1,117	393.18	36,665	4	8	54,998	109,996	93.1	439,984.00	8,544	4
Upper Lehigh Coal Company	253.1	703	659.10	66,261	2	5	92,725	231,814	100.4	463,628.12	8,827	4
J. C. Haydon & Co.	233.5	702	474.01	55,464	3	3	110,927	110,927	117	332,786.05	4,050	2
Pardee Brothers & Co.	75.3	834	220.00	20,386	1	8	22,935	183,478	92.7	183,478.16	440	6
Miscellaneous companies	216.7	3,597	339.14	37,026	11	20	61,092	111,077	116	1,221,851.11	21,859	15
Totals and averages	221.5	14,421	401.05	31,057	52	134	43,110	111,090	77.5	5,776,699.08	96,136	70

TABLE OF COMPARISON *Showing the different causes of fatal accidents in the Fourth district, for the past ten years.*

CAUSE OF ACCIDENTS.	YEARS.										
	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	Totals.
By explosions of carbureted hydrogen gas,	3	1	. .		1	1	1	.	1	1	9
By falls of coal, roof and sides,	24	24	18	10	19	13	6	14	22	19	169
By cars inside and outside,	11	8	11	17	8	5	3	6	11	19	99
By blasts and explosions of powder,	1	1	1	3	3	2	2	4	4	1	22
By machinery inside and outside,	4	1	2	2	3	1	1	2		7	23
By boiler explosions,	.	. .	. .	. .	3	1	1	.	4		9
By miscellaneous causes inside and outside,	4	5	6	8	5	12	1	6	4	5	56
Totals,	47	40	38	40	42	35	15	32	46	52	387

COMPARATIVE STATEMENT *Showing the number of fatal accidents per thousand persons employed; also number of tons of coal produced per fatality in the Fourth district, for the past ten years.*

YEARS.	Production in tons.	Number of deaths.	Tons produced per fatality.	Number of persons employed.	Ratio employed per life lost.	Number of deaths per thousand employed.
1881,	5,037,948	47	107,190	11,386	242.25	4.128
1882,	5,360,497	40	134,012	12,298	307.45	3.252
1883,	5,666,767	38	149,125	13,598	357.84	2.794
1884,	5,274,227	40	131,885	14,299	357.47	2.797
1885,	5,535,544	42	131,798	14,224	338.66	2.952
1886,	5,333,518	35	152,386	14,140	404.00	2.475
1887,	3,961,594	15	264,106	14,096	939.73	1.064
1888,	4,892,514	32	152,891	14,448	451.50	2.215
1889,	5,655,196	46	122,939	14,686	319.26	3.200
1890,	5,776,699	52	111,090	14,421	277.33	3.606
Totals,	52,494,504	387	135,619	137,596	355.53	2.812

COLLIERY IMPROVEMENTS MADE DURING YEAR 1890 IN THE FOURTH DISTRICT.

The following are the improvements made at the collieries of this district which have been reported to this office:

A. Pardee & Co.

Cranberry colliery.—At this colliery a new slope has been sunk to the basin in the Wharton vein, at a point about 8,000 feet west of the breaker. A set of conveyors have been placed in position at the breaker for the purpose of stocking any surplus of pea and buckwheat coal.

Hazleton mine.—At this colliery an additional boiler (Hazleton) of 215 horse-power was placed in position.

No. 3 colliery.—At this colliery a new locomotive has been introduced to take out the slate and pea coal from under the breaker to the slate and stock piles respectively.

Coxe Brothers & Co

This company, during the year, completed and put in operation their iron breaker at Drifton, Pa.

This breaker is situated at the mouth of No. 2 slope, the two tracks of which run directly to the top of the breaker.

As the pitch of this slope is over 60 degrees the mine cars are not hoisted to the breaker but are emptied into the "gunboats" which are made of iron and run only on the slope; at the bottom of the slope, by means of a dump which is so constructed and works so effectively as to allow one car per minute to be very easily dumped into the gunboat and hoisted to the top of breaker, where, by the construction of the gunboat and the railroad, the gunboat empties its contents on to the platform while the other gunboat is being filled at the bottom of the slope.

I should like very much, if time and space permitted me, to go on and give a description of the improved machinery at work in this breaker for sizing, breaking, cleaning and conveying anthracite coal, but the Hon. Eckley B. Coxe, the managing partner of this company, prepared and read, at the September meeting in New York, of the American Institute of Mining Engineers, a very full description of the iron breaker and the machinery used by the company at their collieries for handling and preparing anthracite coal.

The paper was published in pamphlet form by the institute, and has since been published by the *Colliery Engineer* in their issues for January and February, 1891.

To those who are in any way interested in the improvements in machinery for breaking, sizing, cleaning and conveying coal at the collieries, I would recommend a careful perusal of this description with a study of the accompanying plates.

The breaker was operated first May 24, 1890, and has already shown a large capacity. Having passed through and cleaned over 260 tons per hour.

G. B. Markle & Co.

Jeddo No. 4.—At this colliery a self-acting plane has been constructed leading from the east Cross Creek stripping gangway to Jeddo No. 1 first lift gangway.

Jeddo No. 5.—The water has been taken out of the first lift of the old Pink Ash colliery and a new slope is being sunk below said lift, size 7 feet above the rail by 12 feet wide, and this colliery is to be known hereafter as Jeddo No. 5.

Highland No. 1.—At this colliery a self-acting plane has been constructed at the eastern end of the Highland No. 1 first lift gangway to obtain a body of coal extending much further north than the outcrop. This plane is to be known as plane "C."

Highland No. 2.—At this colliery a tunnel was started July, 1890, size 7 feet above the rail by 14 feet wide, proposing to connect by said tunnel the Buck Mountain vein with the Wharton vein. The tunnel, which is to be known as "tunnel C," has been driven in over 300 feet and is not yet completed.

A slope has been sunk at east end of basin, from first lift to the east into a small basin; size of slope 7 feet above the rail by 9 feet wide; length of slope 195 feet, and it is to be called "slope C."

On the surface a boiler was placed and connected with steam pipe to the engines in the mines in the first lift. A water pipe was laid from Highland No. 2 to said boiler, a distance of about 3,100 feet.

Have started to rob east end of first lift, and began opening the first lift west gangway in order to rob it out. At No. 5 Jeddo a bore hole was put down 1,000 feet deep for water, from which the supply for boilers and all other purposes has been obtained.

In the south side basin a 6-inch artesian well was bored down 700 feet deep, and a very large supply of water obtained for Jeddo No. 3 and No. 4.

The third stripping on the Jeddo property of this company has been opened up on the south outcrop of the first basin west of Cross Creek.

Linderman & Skeer.

East Sugar Loaf, West, No. 1.—At this colliery a second opening was made from first lift in the Primrose vein to the surface, having an area of 64 square feet, on which has been placed a ventilating fan 16 feet in diameter.

Two tunnels, one in the second and one in the third lift, have been driven from the Mammoth vein to the Primrose vein, and a tunnel is being driven in second lift from Primrose to overlying veins.

Four new boilers, 33 by 36, have been put in position and housed by an addition to the boiler house and trestling. A new pea coal and buckwheat coal screen was placed in the breaker.

East Sugar Loaf No. 2.—At this colliery a tunnel was driven south from Mammoth to Primrose vein, and the vein found in fair condition. A second opening, with an area of 64 square feet, was driven to the surface, and a ventilating fan 16 feet in diameter placed thereon.

A new slope, size 15 feet by 8 feet in the clear, was opened from the surface to the first lift in the Wharton vein. This slope is to be continued to the fourth lift, and a force of men is working at it now.

In the second lift a tunnel was driven from a point in the Wharton to where the second lift was supposed to be in the Mammoth vein. This part of the mine caved in about twenty years ago, and a large quantity of coal was thereby practically lost to the colliery. But this tunnel, it is supposed, will open up this large amount of lost coal.

In the third lift a tunnel was driven from the Mammoth to the Primrose vein, and a second opening is being driven from this lift to connect with the second opening at the first lift.

In the fourth lift a tunnel has been extended to the Wharton vein and a second opening is being driven to the third lift, when the ventilation will be connected with the new fan on Primrose vein.

In the fifth and lowest present lift the east gangway is being retimbered preparatory to taking the coal from the old breasts. This lift has been idle for years.

East Sugar Loaf No. 4.—The pumps at this place have been greatly improved by putting Carter's improved valves on them. This change will increase the efficiency of the pumps about thirty per cent.

A new reservoir was built east of this slope which will do much toward solving the question of fresh water during drouth on the south side of basin.

At this reservoir an eight-inch pump is placed with a line of six-inch pipe attached. Through these pipes the water is thrown about fifty feet vertically to a point from whence it runs by gravity to No. 5, No. 6 and to a reservoir at west No. 1. To convey the water from No. 5 to No. 6 a line of two-and-a-half inch pipe was laid 2,750 feet in length.

East Sugar Loaf No. 5.—At this colliery a tunnel was driven north to the Wharton vein, and a second opening driven toward the surface, but was discontinued in rock.

The old second lift Mammoth gangway was opened for a distance of 500 feet, from which point a tunnel is being driven to the Primrose on the south.

The old Sandy Run gangway has been reopened and three chutes have been opened up the respective distances 300, 400 and 500 feet through which it is expected to get a large amount of Mammoth coal that was heretofore abandoned.

Three new boilers, 33 inches by 36 feet, were placed in position. The McClave grate-bars are used under these boilers and also under all the new boilers of the company at Stockton and Humboldt.

The breaker has been greatly improved by an addition of three screens and a set of elevators which increased the capacity of the breaker about twenty-five per cent.

East Sugar Loaf No. 6.—On the first lift of this colliery a tunnel was driven south from the Wharton, cutting the Mammoth and Primrose veins. A second opening is being driven to the surface when a new fan is to be erected. In the second lift a tunnel is being driven south to the Primrose vein which will open up a large area of coal.

All the pumps at this place are provided with Carter's improved valve, which adds about twenty-five per cent. to the efficiency of the pumps.

All the boilers at this place have been remodeled, most of them provided with blowers and the McClave grate-bars. A large and commodious boiler house was built. A large heater for fresh water replaces the small one formerly in use.

Humboldt Colliery.—At slope No. 1, the pump that was at the bottom of the slope was taken out and put near the bottom of No. 2, as were also the column and steam pipes, as the water from No. 1 runs by gravity to No. 2. This change was made to relieve a considerable quantity of Wharton vein coal that was tied up on account of the water.

A line of troughs was laid from the top of No. 2 to the top of No. 1 to convey the water to a new reservoir recently made. At this reservoir a fourteen-inch pump was placed to supply the breaker with wash water.

Three of the boilers at No. 1 were lengthened and removed to No. 2.

The old east gangway in No. 1 was re-opened and five rock chutes driven into the Parlor vein, through which a considerable quantity of coal will be taken out.

At slope No. 2 a tunnel is being driven from the Wharton to the Gamma vein, and Buck Mountain vein also. This tunnel will open up a large area of coal.

At slope No. 5 a tunnel was driven South from the Wharton to the Parlor vein. This tunnel is located about 400 feet east of slope; a tunnel was also driven to the Parlor vein from the Wharton about 1,200 feet west of the slope. Both tunnels cutting the vein in fair condition.

A tunnel is being driven from the Wharton to the Gamma and may be extended to the Buck Mountain vein.

Besides the improvements mentioned, a new colliery has been opened at Beaver Meadow, by the Evans Coal Company. This company of which John D. Evans, Esq., is the superintendent, has opened a new slope on their property a depth of one hundred yards to the basin and it has a very fine vein of coal.

They have built a new breaker during this year, which began operations about the first of August. The breaker, when completed, by the finishing off and supplying with machinery of a wing, for which the foundations are laid, and timber on the ground; it will have a capacity of fully six hundred tons per day.

W. F. Carter & Co.

Coleraine.—This company during the past year have re-timbered their old slope a distance of 150 yards, and have laid new track the entire length of the slope, and relaid the road in most of their gangways; have sunk an inside slope from which they are taking fifty cars per diem. Have a siphon in this dip made of 4-inch pipe 700 feet long, and which raises the water a vertical height of 22.75 feet. In their new slope they have re-timbered the slope its entire length, driven a tunnel through a fault in Wharton vein, and put in a self-acting bottom on the slope.

EXAMINATION OF APPLICANTS FOR CERTICATES OF QUALIFICATION AS MINE FOREMEN.

The examination of applicants for certificates of qualification as mine foremen was held in this district in this year at Drifton, Pa., on July 8th and 9th. Owing to the recent date of the death of Inspector David Jonathan the board of examiners consisted of Hon. Eckley B. Coxe, coal operator, and Mr. Henry Bullock, miner. The following named persons having passed the examination satisfactorily were recommended to the Secretary of Internal Affairs for certificates according to the provisions of the mining laws:

David J. Roderick, ... Stockton.
Charles Crouse, ... Stockton.
William Iles, ... Freeland.
August Wolf, ... Drifton
Theophilus Gibbon, ... Drifton.
Benton Shaver, ... Drifton.
Daniel J. Marley, ... Jeddo.
Daniel J. Quinn, ... Jeddo.
Isaac Jones, ... Ashland.

MINE FIRE AT HAZLETON MINE OF A. PARDEE & CO.

At this mine, about one o'clock on the morning of July 21, 1890, a fire was discovered by the pump boys and engineer in the gangway near a locomotive, who, after fighting it for sometime with buckets, were forced to retreat. A messenger was then sent for the inside foreman, Mr. Thomas Mimford, who having convinced himself by a personal examination of the seriousness of the situation and placing the men present under the charge of the fire-boss with orders to do all they could, he immediately, in person, went to the residence of the general superintendent, Frank Pardee, Esq., about 4:30 a. m., and under his directions a general alarm was sent out and men were summoned by special messengers and the fire hose gotten out. By 6:30 o'clock they had a two-inch hose attached to the pump and were throwing water on the fire that was visible from the gangway.

In the meantime the ventilating fan at No. 7 slope had been stopped

as it was drawing the gases from the fire east towards the top of the No. 1 bore-hole slope, so that no one could get at the fire from that side, the carbonic oxide gas having already killed five mules. After the fan was stopped the air current reversed, and the fresh air came from both sides toward the fire, thence up an untimbered muleway and from this found its outlet up the main hoisting slope. The fire was now sweeping along the airway and burning the batteries and refuse in two old breasts, but the men were making great progress from the west side having the powerful stream from the pump, while on the east side the progress in fighting the fire was necessarily very slow, as they only had a small stream of water from a one-inch pipe which had been used to carry water from the surface through the airway to the stables, and which leaked badly. Preparations were now made to place a small pump in the ditch at the top of the underground slope about 700 feet east of the fire, and with it force an effective stream on it from that side.

However, before the pump was gotten in position it was suggested that the steam pipe from the surface be filled with water from outside and the hose be attached to it at the bottom, thus giving about 460 feet of pressure, which suggestion was at once acted upon, and about 7 p. m. the water was turned on and from that time on it was plain sailing.

By the next morning the fire was completely extinguished, and in about a week all was cleared away and re-timbered.

Great credit is certainly due the men, who stood to their work so manfully in the face of great heat and danger from noxious gases, and which all ended so fortunately without an accident to a single person.

This fire burned over a space of between 20 to 30 yards in the gangway, and about 60 yards in the the airway, and the chutes and batteries in two breasts, the coal being on fire over this space.

This fire is supposed to have been started from the lamps of the pump-boys, who were putting water in the locomotive and were probably "skylarking."

Remarks on Fatal Accidents.

In connection with the remarks on these sad occurrences, I wish to make the statement that many of these accidents might have been avoided with the use of ordinary precaution by the victims themselves or some one else who was in charge of the work at the time. Twenty-four out of the fifty-two fatalities occurred on the surface at the strippings by cars or by the machinery in and about the breakers; thus keeping the record the same as last year, viz: Forty-six per cent. of all the fatal accidents, while the remaining twenty-eight fatalities occurred in the mines.

I shall briefly refer to a few of these accidents and will use the number by which they are marked in Table IV.

No. 2. Otto Nervott, German, aged 20 years, was killed at Drifton

about 9.15 p. m., the 28th of January. He was employed as conductor on a locomotive hauling cars between No. 1 and 2 slopes, and according to the testimony of William Baskin, engineer, they were engaged in bringing four cars of pea coal from No. 1 breaker to No. 2 slope boiler-house. The cars were being pushed in front of the locomotive and Otto was riding on the front car without any lantern, and in getting off and running ahead of the cars to turn the switch he struck a surveyor's stake left in the center of the track and fell on the track, the two first cars passing over his head killing him instantly. Had he carried a lantern this accident would have been avoided.

No. 3. George Korechko, Hungarian, aged 25, single, was engaged as an outside laborer at Deringer to load stock coal, was so badly injured February 21, by mine cars that he died at Drifton Hospital on the 22d instant. Deceased was not required to get on the mine cars, but he attempted to get on and fell under them, and four cars passed over him nearly severing his right leg from his body. An operation was performed, but the poor fellow died, as before stated, another victim to the foolhardy practice of jumping on moving cars without any reason for it.

No. 6. Andrew Kmetz, Hungarian, laborer, aged 35 years, married, was instantly killed by a fall of top bench in No. 4 slope, Upper Lehigh on the 11th of March. Deceased was engaged in loading a car, his miner, Charles Schroeder assisting him at the time. When the piece of top bench fell and caught both men under it killing Kmetz instantly and breaking Schroeder's leg below the knee, they were engaged at the dangerous work of robbing pillars. A widow and one orphan were left.

No. 7. Henry Bock, engineer, aged 45 years, married, was so seriously injured that he died the same day, by being run over by a truck on the slope at Hazleton mine, March 13. Deceased was the hoisting engineer at the slope, but this day had been in the mines with some mechanics fixing a pump. When the work was finished the night engineer had come on duty and was lowered down the slope by another engineer. The tools were placed on the passenger car and with the supply truck in front, the signal being given, they were all hoisted to the surface. The passenger car being stopped too low on the slope to unload the tools, the signal was given and it was hoisted farther up and stopped by signal, and deceased and the other men began to unload the tools. While in the act some one down the slope signalled for the car to be lowered and the firemen thinking the men wanted the truck run on the bridge, requested the engineer to let him handle the engine and his request being granted, he started the engines quite fast and deceased and two other men who were on the car jumped off, but deceased slipped, falling between the truck and car and was dragged to the mouth of the slope where the truck ran over him fatally injuring him.

An inquest was held and the verdict rendered was "that Harry Bock came to his death through the carelessness of the engineer in charge and the firemen who started the engines."

The inspector of mines (David Jonathan) instituted proceedings against the fireman and his trial came off April 2, before Judge Rice, and he (the fireman) was fined.

No. 8. James Ryan, Irish, miner, aged 37 years, married, was seriously injured in the No. 10 slope at Eckley, March 20. Deceased having finished his day's work, was on his way home and got between two loaded cars to ride out to the slope, and a large lump of coal on one of the cars caught the roof, throwing the car from the track and catching his right foot between the bumpers, crushed it so badly that amputation was necessary. Blood poisoning followed and on the twenty-ninth the poor man died, leaving a widow and seven orphan children.

No. 10. John Namiets, Hungarian, laborer, aged 30 years, married, was killed at Yorktown No. 12 slope by the rush of coal falling on the double timbers causing them to give away and fall upon him. He was buried under the falling timbers and died from his injuries in about forty-five minutes after the accident, but it was twelve hours before his body was rescued.

No. 12. Joseph H. Ferry, English, mine foreman, aged 33 years, married, was killed April 7, at the foot of Hazleton mine slope, called bore-hole No. 1 slope. Deceased was standing on the turnout at the foot of slope and was flagging the locomotive engineer to notify him to bring his loaded trip of cars on to the turnout, when a car that had come down the slope was detached from the rope and allowed to run on to the turnout by gravity, caught him between it and another car standing on the turnout, injuring him so seriously that he died one hour and a half after the accident, leaving a widow and two small children to mourn his loss.

No. 13. Michael McPhillips, Irish, miner, aged 55 years, married, was killed at Spring Mountain slope No. 1, April 15, by being thrown down by a mule and the car to which the mule was hitched passing over him, causing internal injuries from which he died about five hours after the accident occurred; leaves a widow and two orphans. Deceased was cleaning the road, and thinking that he was out of the way, paid no heed to the call of the driver, and so was struck and killed.

No. 16. Andrew Furey, Irish, miner, aged 41 years, was instantly killed by a fall of dividing slate in Highland slope No. 2, April 26. He was engaged in driving a cross-heading from the slope to an air-way which is being driven parallel with the slope and he had just fired a shot in the dividing slate, and immediately went back into the cross-heading after the shot exploded and sounded the slate with a pick. When he struck the slate the mass fell upon him, killing him instantly. A widow and six children were left to mourn their protector's untimely end. This man had worked for G. B. Markle & Co. from his boyhood up.

No. 17. Nicholas Landmesser, American, miner, aged 34 years, married, was instantly killed April 30, at slope No. 4, Upper Lehigh, by a fall of

top coal. Deceased was engaged in robbing pillars and was in the act of undermining the top coal when it fell on him with fatal result. A widow and four small children are left behind.

No. 20. Andrew Solak, Pole, laborer, aged 35 years, married, was so seriously injured internally by a fall of top bench at Yorktown colliery, June 19, that he died two hours after the accident. Deceased with two others were engaged in loading coal into a buggy while the two miners were at the face. The fall passed over the miners and struck all three of the laborers, injuring the other two somewhat but hurting Andrew fatally.

No. 23. Edward O'Donnell, Irish, locomotive fireman, aged 20 years, single, was killed at No. 2 slope, Drifton, July 8. He was riding on the front of the locomotive with a bar of iron, when passing a boiler that lay alongside of the track the bar of iron struck the boiler and jammed deceased between it and the locomotive, injuring him internally so that he died.

No. 26. James Bott, Italian, miner, aged 47 years, married, was killed August 4, at Hazleton mine by coal flying from a blast. Deceased was engaged in driving a cross-heading and had drilled two holes and placed the charges in them and prepared them to fire and lit both at the same time. One of the blasts exploded and he, thinking the other had either gone off at the same time or had missed, went back and was instantly killed by its exploding just as he reached it.

No. 28. Andrew Barlock, Hungarian, miner, aged 45 years, married, was killed at Hollywood No. 2 stripping, August 25, by a piece of top bench sliding off the bottom and striking him on the head with fatal effect. Deceased had worked for C. Pardee & Co. for four years and was regarded as a very good miner. He had fired a hole in the pillar on the stripping in the four-foot bench and after coming up the pitch while the blast exploded, he went down again without examining the top benches of the pillar, and taking a drill struck the coal that was shattered by the blast, when a large piece of the top bench slid off the pillar, killing him.

No. 30. Edwin Willoughby, American, miner, aged 24 years, married, met an untimely death by being smothered by a rush of coal which threw the manway over into the breast and covered him with fine coal and the *débris* of the manway, September 2. He was on his way up to the face to begin his work on the night shift when the accident occurred; an inquest was held in this case and the verdict rendered was that "Edwin Willoughby came to his death by being smothered by coal dust, and the company and its employes were exculpated from any responsibility for the accident."

No. 34. Rudolph Lenhart, German, miner, aged 42, married, was so seriously injured by being burned by an explosion of carbureted hydrogen gas at Laurel Hill colliery, September 16, that he died from his injuries and burns at 3 p. m., September 17 Deceased with his partner

had been warned by the fire-boss and furnished with a safety lamp to use when going to face of breast which was on a pitch of 85°. The men loaded a car and Albert Baim, partner of deceased, went up to brush out the gas and Lenhart followed him in a few minutes. But before he reached the face, either from the gas being brushed down on his naked lamp or from Bain's own lamp being lit and left down on the coal and his brushing the gas down on it I was unable to learn. But both men were severely burned and Lenhart either from injuries sustained by falling down the steep manway or his burns or both combined, died next day. An inquest was held and the jury rendered a verdict that "Rudolph Lenhart came to his death by being burned by an explosion of gas at Laurel Hill colliery, September 16 lit by some person unknown."

No. 35. Phillip Henry, German, miner, aged 33 years, married, was instantly killed by a fall of roof rock in the West Buck Mountain gangway where he was working at the time, September 22, in No. 3 slope. Deceased was aware that the rock was bad and he had been ordered to prop it by the mine foreman, and to put in double timber as soon as there was room. He did not secure it on Saturday, and finding it still up on Monday morning when he went into the place alone, went under it for some purpose and when his laborer came in he found his lifeless body under the fall of rock

No. 38. Charles Kildea, American, helper, aged 16 years, was so seriously injured at the Stockton stripping, October 16, that he died soon after being taken to the company's hospital at Drifton. Deceased was employed to help the driver in the stripping by leading the mules, and had been ordered not to get on any of the cars but the last one, and only on the back bumper of that one. But, contrary to orders, he tried to get on the side of the second car and fell under, and the cars passed over him, mangling his legs and otherwise injuring him so that he died.

No. 42. Michael Ross, Italian, outside laborer, aged 30 years, employed at Laurel Hill breaker to feed the elevators of bony coal, was fatally injured by being crushed between a car on which he attempted to get and a post of the breakers. He only lived about three hours.

No. 43. Michael Sargeant, Sr., Irish, roadman, aged 58 years, was so seriously injured at No. 6 East Sugar Loaf slope on November 27 that he died the next day about eighteen hours after the accident. Deceased, with two other men, had been employed on Thanksgiving Day in repairing the road at bottom of slope, and having finished their work had given the signal and were being hoisted, deceased standing on the front bumper of car. When, as they were passing under a low collar in slope, he was caught and pulled up on the top of car and his neck dislocated. He had been employed in this slope from the time it was opened and had ridden up and down it very many times.

Nos. 48, 49 and 50. Andrew Yonanski, miner, 27 years of age, Paval Kenderis, laborer, 35 years, and John Ondarko, laborer, 23 years, all Hungarians, were instantly killed at Yorktown No. 9 slope by a fall of

roof rock on the 15th of December. These men were engaged in cleaning up a fall of rock in the breast, and for this purpose were drilling holes in the rock when, without any warning, a second fall occurred with this sad result. An inquest was held, and the coroner's jury rendered the following as their verdict: "That we (the jury) do say that the said Andrew Yonanski, Paval Kenderis and John Ondarko, came to their deaths on the night of the 15th of December, 1890, in No. 9 Yorktown by a fall of rock, and we do not censure the company or any one in charge."

No. 52. Charles Frederickson, Dane, top foreman, aged 42 years, was instantly killed at Hanto screen building on December 27. Deceased was at his employment overseeing the unloading of the coal at the top of the screen building into the different pockets. Three loaded cars were standing at the top of the north plane on the west side of building, and the men in the building pushed three empty cars against the truck on the south plane on the east side of building, and when they struck the truck the jar caused the truck on the north plane on west side to be jerked down the plane, and a hook on the coupling of the last car caught on the front plate of truck, pulling the car over the angle of plane, and the empty cars running by gravity against the truck on south plane, east side, caused a runaway on the planes with no weight on the trucks of the south plane, west side, or the north plane, east side, and as the engineer had left his post to procure some coal for his fire, the cars gained a very rapid rate of speed in a few moments, so that the engineer, who ran in and put the steam on his engines, was unable to check their speed. Deceased seeing a man running cars into the foot of the plane, and thinking him in danger of bodily harm, stepped on to the track of the south plane, on west side, and endeavored to warn this man of his danger, and while so doing the truck on this plane came over the apex of the plane with such momentum as to break its connecting chain, and striking deceased threw him into the second pocket, where his dead body was found. Had he been more mindful of his own safety there would have been no accident on account of this runaway on the planes. A widow and six orphans mourn their loss.

THE STATE HOSPITAL AT HAZLETON.

Before closing I wish to mention the completion during the present year of this much needed institution for the employes of the Middle anthracite coal field.

I quote from the report of the board of commissioners to the Governor in surrending the hospital to the board of trustees appointed to take charge, and the subject matter of this description of the hospital, together with the statements in regard to the expenditures, were kindly furnished me by the secretary of the commission, E. L. Bullock Esq, to whom, after James E. Roderick, Esq., the former mine inspector of

this district, and president of the board of commissioners, who wrote and labored for this project untiringly, and who enlisted Mr. Bullock in in the work, so that after him, Mr. Bullock, more perhaps than any other person, is entitled to the praise for the successful carrying through to completion of the idea of the Hazleton Hospital. Owing to numerous delays which were beyond the control of the board, the excavation for the hospital building was not commenced until January, 1889, and the building was not completed until September, 1890, while the furnishing was not completed until December 1, 1890.

The hospital is very beautifully situated in a park of more than seven acres overlooking the town of Hazleton, and just outside the borough limits. While the location of the building, just beyond the outcrop of the lowest workable vein of coal, has added greatly to the cost, by reason of the bottom rock met in the excavation, it has placed the building beyond any danger of ever being disturbed by any future mining operations.

Being very nearly in the center of the district for which it was provided, the facilities for reaching it from the several colleries and railroad centers are exceptional, either by railroad or ambulance. It is within five minutes walk or drive of the Lehigh Valley railroad, and near the eastern limits of the main street of Hazleton. With the exception of Lansford, it is within an hour's ride of all the collieries of the district.

The building which is a brick structure 305 feet long by about 100 feet at its greatest width, is composed of a main or administration building and two pavilion wards.

The administration building contains the operating room, office of the chief surgeon, superintendent, dispensary, nurses' rooms and convalescents' sitting-room and dining-room upon the first floor. The two wings, or wards upon this floor contain cots for forty-eight patients with two private wards of one cot each.

The second floor contains the quarters of the chief and assistant surgeons with sitting and dining rooms attached. Matron's room, kitchen and domestics' dining and sitting rooms. The third floor contains the laundry and the dormitories for the employes, while the tank for the water supply is on the attic above. The annex which is in the rear of the main building, and connected with it by an arched tunnel, contains the boiler room, pump room and morgue. An area cut out of the solid rock surrounds this annex on two sides.

The wards contain "low-down grates," which, while imparting an air of cheerfulness to the rooms, are useful as ventilators, and to take the chill off the wards in unfavorable summer weather. There are large and extensive bath-rooms, lavatories and closets attached to each ward, as well as upon each floor of the main building. The sanitary and heating arrangements are very complete. The latest improvements in boilers, fans and radiators have been employed, and by this time the wards are abundantly supplied with pure, warmed air to each cot, while the vitiated air is exhausted from openings under each cot. The kitchen is

fitted up with a large stationery range and steam boilers. The floor is rendered fire-proof by means of wrought iron floor beams and brick arches between these floor beams.

The laundry is fitted up with steam dryer, wringer, mangle, tubs and the latest machinery for that purpose, and is operated by steam power. There is an elevator running from the cellar to the third floor. All the stairways are iron and covered with rubber. Great care has been taken to render the building as nearly fire proof as possible. The building has been piped for gas and wired for electric lighting, so that either means of illumination can be used. It is at present furnished with handsome electric-light fixtures.

There is a cellar, properly cemented, under the entire building. There is a central entrance porch as well as four side porches, two at the extremity of either wing. These are for the use of the convalescents in mild weather and can be enclosed with glass for their use in winter.

In furnishing, care has been taken to secure neat and substantial furniture without lavishness, and the operating room and dispensary have been supplied with the latest and very best surgical instruments and appliances. The wards are fitted with adjustable iron cots, good bedding, and a chair and table for each patient.

The convalescents have been given the most desirable rooms upon the first floor for their sitting and dining rooms, and all have all been tastily furnished. Considerable expense was found necessary to secure an adequate supply of pure water, and a private main was laid from the reservoir of the Hazleton Water Company, to the building, a distance of 2,400 feet.

The sewarage has also been a source of much expense, but a well-built sewer has been constructed, connecting the building with the main sewerage system of the borough of Hazleton.

Enough money has been collected by private subscription to acquire the title to the ground, to do nearly all the grading necessary upon the grounds, to put a substantial fence around one-half the hospital plot, and also to pay for the greater part of the sewer.

The board of commissioners that had charge of the building of this very complete institution, and also of the furnishing of the same, was composed of the following honorable gentlemen: James E. Roderick, president; E. L. Bullock, secretary; W. R. Longshore, M. D, Thomas Danghery, Matthew Long and J. S. Loose, with B. F. Linfoot as architect, and J. S. Allam, as builder; they have all, in the fine structure which has been built up, reason to feel proud of having been connected with the institution in their several relations.

The following is the statement of expenditures on account of building fund:

Excavating, leveling and filling,	$2,792 40	
Masonry, sub-structure,	4,431 00	
Building,	46,380 34	
Engineering,	324 15	
Inspection,	137 50	
Architect's fees,	2,678 11	
Water works,	1,339 45	
Piping,	288 36	
Wiring,	392 06	
Superintendence,	340 50	
Commission expenses,	298 20	
Legal expenses,	50 00	
Insurance,	334 00	
Cleaning,	84 20	
Balance due for sewerage,	129 73	
		$60,000 00

The following is a statement of expenditures on account of furnishing fund:

Laundry, machinery and apparatus,	$2,393 00	
Electric fixtures and placing,	660 19	
Kitchen utensils,	149 98	
Glassware and china,	133 60	
Queensware and crockery,	148 70	
Clocks,	59 00	
Silverware,	178 41	
Drugs and supplies,	357 27	
Fitting up dispensary,	128 53	
Setting mantels,	36 83	
Surgical instruments and operating room furniture,	672 31	
Beds and bedding,	2,120 56	
Carpets and curtains,	947 47	
Linen,	204 40	
Furniture,	1,594 11	
Freightage,	157 62	
Cleaning,	22 95	
Bills payable,	35 07	
		$10,000 00

TABLE *Showing quantity of air passing through the Mines of the Fourth Anthracite District of the year 1890.*

NAME OF MINE.	Name of operator.	Number of fans.	Number of persons employed in all the splits.	Number of splits of air currents.	Number of cubic feet of air at intake.	Number of cubic feet of air at or near face.	Number of cubic feet of air at outlet
Hazleton mine	A. Pardee & Co.	1	110	5	45,660	28,175	75,610
Hazleton Mine No. 8	" "	1	75	2	50,400	20,000	48,550
Number Three	" "	*	138	4	55,290	42,720	50,745
Laurel Hill	" "	1	98	6	30,310	26,000	29,720
Number Six	" "	†					
South Sugar Loaf	" "	1	54	2	28,905	20,660	20,660
Cranberry	" "	2	214	3	92,672	46,545	93,100
Drifton No. 1	Coxe Brothers & Co.	1	148	6	47,500	47,700	70,000
Drifton No. 2	" "	2	171	4	73,290	29,820	74,670
Eckley No. 2	" "	‡	43	2	26,100	24,200	27,000
Eckley No. 5	" "	‡	70	2	40,000	40,000	30,000
Eckley No. 10	" "	*	12	1	10,000	10,000	10,500
Stockton	" "	1	84	2	79,600	31,000	86,600
Beaver Meadow	" "	1	46	3	26,720	24,644	28,140
Tomhicken	" "	1	124	7	38,546	14,237	38,685
Deringer	" "	1	127	7	69,300	23,260	84,520
Gowen No. 1	" "	1	69	2	23,550	12,840	33,800
Gowen No. 4	" "	*	48	3	17,145	7,040	17,585
No. 1 colliery	Lehigh Coal and Navigation Company	3	170	9	75,200	65,115	101,600
No. 4 colliery	" " "	1	149	2	74,500	14,700	101,000
No. 5 colliery	" " "	1	114	2	41,000	34,600	44,000
No. 9 colliery	" "	1	63	2	35,800	31,400	65,000
Jeddo No. 3	G. B. Markle & Co.	1	95	2	25,000	23,000	30,000
Jeddo No. 4	" "	1	76	2	12,000	12,000	21,000
Highland No. 1	" "	1	119	2	22,300	24,000	35,100
Highland No. 2	" "	1	79	2	22,500	21,800	26,000
East Sugar Loaf, west, No. 1	Linderman & Skeer	1	58	2	97,000	40,460	78,000
East Sugar Loaf No. 2	" "	1	26	2	15,775	7,750	15,775
East Sugar Loaf No. 5	" "	1	38	1	10,860	9,350	10,160
East Sugar Loaf No. 6	" "	1	47	1	11,100	9,450	11,100
Humboldt colliery	" "	2	134	3	66,837	45,141	68,390
Upper Lehigh No. 5	Upper Lehigh Coal Company	2	114	4	74,402	22,204	104,445
Upper Lehigh Nos. 6 and 7	" "	1	168	3	46,472	24,907	54,720
Spring Mountain No. 1	J. C. Haydon & Co.	1	50	2	29,700	22,500	24,240
Spring Mountain No. 4	" "	1	90	3	43,450	27,250	42,750
Sandy Run	M. S. Kemmerer & Co.	3	110	7	47,000	53,638	153,370
Pond Creek	" "	1	40	1	19,800	21,960	40,640

Mt. Pleasant No. 5	Pardee, Sons & Co.	1	51	2	12,400	11,500		14,450
Yorktown	G. H. Meyers & Co.	‡	39	2	18,000	5,480		18,600
Coleraine	W. T. Carter & Co.	‡	48	2	15,210	14,170		15,840
Honey Brook No. 2	Lehigh and Wilkes-Barre Coal Company	1	85	5	41,000	25,200		52,300
Beaver Brook	C. M. Dodson & Co.	1	127	2	29,250	14,700		29,750
Milnesville	Milnesville Coal Company	‡	32	3	15,800	11,400		14,000
Hazle Brook	J. S. Wentz & Co.	1	52	2	23,930	10,500		23,710
Evans' colliery	Evans' Mining Company	‡	73	3	15,000	10,000		20,000
Total		43	3,879	134	1,696,274	1,063,016		2,035,825

* Natural. † Loading coal from stripping and robbing pillars. ‡ Heated outlet.

TABLE I.—*Showing Location of Collieries in the Fourth Anthracite District.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Hazleton mine	A. Pardee & Co.	Hazleton, Luzerne county.	Frank Pardee.	Hazleton, Pa.
Laurel Hill	" "	" "	" "	" "
Number Three	" "	" "	" "	" "
Number Six	" "	" "	" "	" "
South Sugar Loaf	" "	" "	" "	" "
Cranberry	" "	" "	" "	" "
Drifton No. 1	Coxe Brothers & Co.	Drifton, Luzerne county.	Hon. Eckley B. Coxe.	Drifton, Pa.
Drifton No. 2	" "	" "	" "	" "
Eckley No. 5	" "	Eckley, Luzerne county.	" "	" "
Eckley No. 10	" "	" "	" "	" "
Stockton	" "	Stockton, Luzerne county.	" "	" "
Beaver Meadow	" "	Beaver Meadow, Carbon county.	" "	" "
Tomhicken	" "	Tomhicken, Luzerne county.	" "	" "
Deringer	" "	Deringer, Luzerne county.	" "	" "
Gowen	" "	Gowen, Luzerne county.	" "	" "
Colliery No. 1	Lehigh Coal and Navigating Company.	Nesquehoning, Carbon county.	W. D. Zehner.	Lansford, Pa.
Colliery No. 4	" " "	Lansford, Carbon county.	" "	" "
Colliery No. 5	" " "	" "	" "	" "
Colliery No. 6	" " "	" "	" "	" "
Colliery No. 9	" " "	" "	" "	" "
Jeddo No. 3	G. B. Markle & Co.	Jeddo, Luzerne county.	John Markle.	Jeddo, Pa.
Jeddo No. 4	" "	" "	" "	" "
Highland No. 1	" "	Highland, Luzerne county.	" "	" "
Highland No. 2	" "	" "	" "	" "
East Sugar Loaf, West, No. 1	Linderman & Skeer.	Stockton, Luzerne county.	James E. Roderich.	Stockton, Pa.
East Sugar Loaf No. 2	" "	" "	" "	" "
East Sugar Loaf No. 5	" "	" "	" "	" "
East Sugar Loaf No. 6	" "	" "	" "	" "
Humboldt	" "	Humboldt, Luzerne county.	" "	" "
Upper Lehigh No. 2	Upper Lehigh Coal Company.	Upper Lehigh, Luzerne county.	A. C. Leisenring.	Upper Lehigh, Pa.
Upper Lehigh No. 4	" "	" "	" "	" "
Spring Mountain No. 1	J. C. Haydon & Co.	Jeanesville, Luzerne county.	J. C. Haydon.	Jeanesville, Pa.
Spring Mountain No. 4	" "	" "	" "	" "
Lattimer No. 1	Pardee Brothers & Co.	Lattimer, Luzerne county.	Calvin Pardee.	Lattimer Mines, Pa.
Lattimer No. 2	" "	" "	A. W. Drake, ass't supt.	" "
Lattimer No. 3	" "	" "	" "	" "
Mt. Pleasant	Pardee Sons & Co.	Mt. Pleasant, Luzerne county.	Calvin Pardee.	303 Drexel build. Phila. Pa.
Hollywood	Calvin Pardee & Co.	Hollywood, Luzerne county.	" "	Hazleton, Pa.
Sandy Run	M. S. Kemmerer & Co.	Sandy Run, Luzerne county.	Walter Leisenring.	Sandy Run, Pa.
Pond Creek	" "	Pond Creek, Luzerne county.	" "	" "
Yorktown	George H. Myers & Co.	Yorktown, Carbon county.	George John.	Audenried, Pa.
Coleraine	Wm. T. Carter & Co.	Beaver Meadow, Carbon county.	John Wear.	Beaver Meadow, Pa.
Honey Brook No. 2	Lehigh and Wilkes-Barre Coal Company.	Trescow, Carbon county.	J. I. Hollenbeck.	Audenried, Pa.
Beaver Brook	C. M. Dodson & Co.	Beaver Brook, Luzerne county.	E. L. Bullock.	" "
Milnesville	Milnesville Coal Co.	Milnesville, Luzerne county.	John A. Mason.	Milnesville, Pa.
Hazlebrook	J. S. Wentz & Co.	Hazle Brook, Luzerne county.		
Evans	Evans Mining Company.	Beaver Meadow, Carbon county.	John D. Evans.	Beaver Meadow, Pa.

TABLE NO. II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fourth Anthracite District for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number of days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number pounds dynamite.
A. Pardee & Co.												
Hazleton mine	Hazleton	177,570 02	171,220.02	229.3	529	3	15	3,742	45	64	3	.....
Laurel Hill	"	107 010.12	100,098.12	238.2	242	3	10	1,283	48	35	...	.....
Number Three	"	74,497.16	68 097.16	204.2	241	2	3	1,652	30	36	...	.....
Number Six	"	24.174.05	22,699.05	134.0	93	...	2	363	10	14	...	.....
South Sugar Loaf	"	40,315.09	37,075.09	155.3	126	...	1	1,278	28	12	...	.....
Cranberry	"	123,089.13	110,589.13	199.5	342	2	8	3,073	67	58	4	.....
General work	"	.....	.....	.....	60	...	...	.....	.....	57	...	.....
		546,657 17	509,780.17	193.4	1,633	10	39	11,391	228	276	...	.....
Coxe Brothers & Co.												
Drifton No. 1	Drifton	453,011.07	419,823.02	401	790	4	11	8,876	60	105	4	.....
Drifton No. 2	"											
Eckley No. 5	Eckley	159,202.02	147,142.02	277	246	1	3	2,363	18	38	...	.....
Eckley No. 10	"	137,566 02	125,602.17	319	292	1	1	2,141	19	40	1	.....
Stockton	Stockton	116,233.03	102,443.03	255	367	3	1	1,910	22	21	1	.....
Beaver Meadow	Beaver Meadow	133,106.01	111,386.13	268	358	1	4	1,676	23	29	2	.....
Tomhicken	Tomhicken	62,188.07	55,415.18	227	217	...	4	1,752	6	30	1	.....
Deringer	Deringer	330,805.08	311,810.11	292	680	3	5	8,093	19	100	5	.....
Gowen	Gowen											
		1,392,112.10	1,273,624.06	291.3	2,950	13	29	26,810	167	363	14	.....
Lehigh Coal and Navigation Company.												
Colliery No. 1	Nesquehoning	256,522.06	256,512.11	279.2	557	1	7	3,540	39	89	7	.....
Colliery No. 4	Lansford	159,826.05	159,585.17	253.3	297	1	...	660	38	77	...	.....
Colliery No. 5	"	80,553.10	80,089.05	208.6	250	3	...	960	6	40	...	.....
Colliery No. 6	"				127	...	...	.....	11	10	1	.....
Colliery No. 9	Coaldale	213,579.07	208,563.19	257.4	379	1	...	360	11	58	3	.....
Screen building	Hanto, Carbon county	.....	.....	.....	158	1	...	.....	24	.....	2	.....
		710,481.08	704,751.12	249.6	1,768	7	...	5,520	129	274	13	.....

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number of days worked	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules	Number mine locomotives	Number pounds dynamite.
G. B. Markle & Co.												
Jeddo No. 3.	Jeddo, Pa	115,396 16	108,864.18	258	267	. . .	5	1,515	32	54	2	. . . . .
Jeddo No. 4.	" "	101,169.09	95,442.17	238	311	. . .	2	754	37	75	3	. . . . .
Highland No. 1.	Highland, Pa.,	180,034.11	169,843.19	267	296	. . .	5	3,835	21	56	. . .	. . . . .
Highland No. 2.	" "	89,117.13	84,073.05	217	243	1	2	2,591	21	47	. . .	. . . . .
		485,718.09	458,224.19	245	1,117	1	15	8,695	111	232	5	. . . . .
Linderman & Skeer.												
East Sugar Loaf No. 1.	Stockton, Pa..	336,472.00	87,922.17	247.3	238	1	1	2,384	22	88	1	49.184
East Sugar Loaf No. 2.	" "		86,592.19	237.4	314	2	2	1,470	37		1	
East Sugar Loaf No. 5.	" "		89,132.08	243 4	347	1	4	2,632	57		1	
Humboldt.	Humboldt,	103,512.00	88,912.19	215.3	218	. . .	1	2,058	32	32	1	1,800
		439,984.00	352,568.03	235.8	1,117	4	8	8,544	148	120	4	50,984
Upper Lehigh Coal Company												
Upper Lehigh Colliery No. 2												
Slope No. 1.	Upper Lehigh,				. . . .	. . .	. . .	. . . . .	8	. . . . .	. . .	. . . . .
Slope No. 2.	" "				173	. . .	. . .	. . . . .	20	4	1	. . . . .
Slope No. 5.	" "				129	. . .	. . .	3,262	12	25	1	. . . . .
Slope No. 6.	" "	322,878.19	298,396.19	264.1	77	. . .	2	1,692	8	19		
Slope No. 7.	" "				113	. . .	1	1,810	4	17	1	. . . . .
Slope No. 8.	" "				18	. . .	. . .	21	2	. . . .		
Upper Lehigh Slope No. 4.	" "	140,749.13	131,399.13	242.2	193	2	2	2,042	16	40	1	. . . . .
		463,628.12	429,796.12	253.1	703	2	5	8,827	70	105	4	. . . . .
J. C. Haydon & Co.												
Spring Mountain No. 1.	Jeanesville,	149,250.09	139,050.09	230	314	2	2	1,260	32	38	1	14,175
Spring Mountain No. 4.	" "	183,535.16	156,535.16	237	388	1	1	2,790	40	42	1	11,725
		332,786.05	295,586.05	233.5	702	3	3	4,050	72	80	2	25,900

Pardee Brothers & Co.												
Lattimer No. 1,	Lattimer mines,	6,778.03	5,335.05	25	63	1	2	20				
Lattimer No. 2,	" "	11,718.17	5,478.17	14.5	218		1	40	34	47	2	
Lattimer No. 3,	" "	164,981.16	153,255.16	186.5	553		5	380	21	43	4	
		183,478.16	164,067.18	75.3	834	1	8	440	55	90	6	
Miscellaneous companies												
Sandy Run,	Sandy Run,	119,119.17	106,495.17	229.5	311		2	2,849	30	36	1	
Pond Creek,	Pond Creek,	11,139.18	8,667.18	138	30		0	313	6	4	1	
Mt. Pleasant,	Mt. Pleasant,	54,549.16	46,049.26	192	227		1	1,094	52	25	1	
Hollywood,	Hollywood,	120,000.00	107,494.07	202	388	1	7	2,850	37	48	1	59,950
Yorktown,	Yorktown,	146,234.08	134,234.08	251.1	392	8	3	1,838	54	50	2	
Coleraine,	Beaver Meadow,	128,506.00	118,134.00	262	334		0	1,272	32	32	2	
Honey Brook No. 2,	Trescow,	138,859.09	116,929.02	251.2	280			2,864	44	25	1	
Beaver Brook,	Beaver Brook,	205,660.00	184,208.00	211.4	445	2	1	3,828	51	40	2	
Milnesville,	Milnesville,	198,350.00	179,556.00	223	657		4	3,019	40	35	3	
Hazle Brook,	Hazle Brook,	90,078.00	81,428.08	219	256		1	1,132	16	11	1	
Evans colliery,	Beaver Meadow,	9,354.03	9,222.03	204	100		1	800	2	5		
		1,221,851.11	1,092,419.19	216.7	3,420	11	20	21,859	364	311	15	59,950

Recapitulation.

A. Pardee & Co.,	Hazleton,	546,657.17	509,780.17	193.4	1,633	10	39	11,391	228	276	7	
Coxe Brothers & Co.,	Drifton,	1,392,112.10	1,273,624.06	291.3	2,950	13	29	26,810	167	363	14	
Lehigh Coal and Navigation Company,	Lansford,	710,481.08	704,751.12	249.6	1,768	7	7	5,520	129	274	13	
G. B. Markle & Co.,	Jeddo,	485,718.09	458,224.19	245.0	1,117	1	15	8,695	111	332	5	
Linderman & Skeer,	Stockton,	439,984.00	352,568.03	235.8	1,117	4	8	8,544	148	120	4	50,984
Upper Lehigh Coal Company,	Upper Lehigh,	463,628.12	429,796.12	253.1	703	2	5	8,827	70	105	4	
J. C. Haydon & Co.,	Jeanesville,	332,786.05	295,586.05	233.5	702	3	3	4,050	72	80	2	25,900
Pardee Brothers & Co.,	Lattimer Mines,	183,478.16	164,067.18	75.3	834	1	8	440	55	90	6	
Miscellaneous companies,		1,221,851.11	1,092,419.19	216.7	3,597	11	20	21,859	364	311	15	59,950
		5,776,699.08	5,280,820.11	221.5	14,421	52	134	96,136	1,344	1,851	70	136,834

TABLE III—*Showing the number of each class of employes at each colliery in the Fourth Anthracite District during the year 1890.*

NAME OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
A. Pardee & Co.															
Hazleton mine	2	152	52	31	47	17	301	1	6	18	120	83	. . .	228	529
Laurel Hill	1	66	26	11	13	5	122	1	8	19	53	39	. . .	120	242
Number Three	1	79	33	12	15	6	146	1	4	11	55	24	. . .	95	241
Number Six	1	8	20	7	5	1	42	1	3	4	30	13	. . .	51	93
South Sugar Loaf	1	44	14	5	9	3	76	1	3	8	25	13	. . .	50	126
Cranberry	1	114	42	23	39	7	226	1	9	21	45	40	. . .	116	342
Men at general work	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	35	. . .	. . .	15	10	60	60
Total	7	463	187	89	128	39	913	6	68	81	328	227	10	720	1,633
Coxe Bros. & Co.															
Drifton No. 1	7	281	57	136	30	20	531	4	17	27	118	87	6	259	790
Drifton No. 2															
Eckley No. 5	3	63	17	37	11	6	137	2	7	6	58	35	1	109	246
Eckley No. 10	2	60	27	39	12	3	143	2	9	9	92	36	1	149	292
Stockton	2	68	28	39	10	4	151	2	11	10	84	108	1	216	367
Beaver Meadow	4	22	20	46	8	4	104	2	9	15	98	129	1	254	358
Tomhicken	2	73	23	21	2	4	130	2	6	7	43	28	1	87	217
Deringer	7	221	70	77	28	21	424	2	22	20	131	79	2	256	680
Cowen															
Total	27	788	242	395	106	62	1,650	16	81	94	624	502	13	1,330	2,950
Lehigh Coal and Navigation Company.															
Colliery No. 1	3	119	53	90	31	18	314	3	7	27	96	110	. . .	243	557
Colliery No. 4	1	61	16	59	21	10	168	1	4	17	58	49	. . .	129	297
Colliery No. 5	1	87	12	22	11	5	138	1	5	9	46	51	. . .	112	250
Colliery No. 6	2	59	9	31	11	3	115	. . .	2	5	. . .	5	. . .	12	127

Colliery No. 9.	1	98	44	50	15	8	216	1	8	15	70	69	. . .	163	379
Screen building,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	5	6	75	69	2	158	158
Total,	8	424	134	252	89	44	951	7	31	79	345	353	2	817	1,768
G. B. Markle & Co.															
Jeddo No. 3,	1	40	10	44	22	15	132	1	7	10	47	64	6	135	267
Jeddo No. 4,	1	23	7	46	21	12	110	1	9	16	40	129	6	201	311
Highland No. 1,	1	82	54	12	20	14	183	1	7	8	43	48	6	113	296
Highland No. 2,	1	53	45	19	18	13	149	1	7	15	30	35	6	94	243
Total,	4	198	116	121	81	54	574	4	30	49	160	276	24	543	1,117
Linderman & Skeer.															
East Sugar Loaf, West, No. 1,	1	71	23	28	11	4	138	1	3	13	40	43	6	100	238
East Sugar Loaf No. 2,	1	70	49	53	15	5	193	1	3	18	47	46		121	314
East Sugar Loaf No. 5 (5 and 6),	2	94	52	29	16	4	197	2	5	22	52	69		150	347
Humboldt,	1	58	45	12	14	6	136	1	6	11	22	42		82	218
Total,	5	293	169	122	56	19	664	5	17	64	161	200	6	453	1,117
Upper Lehigh Coal Company.															
Slope No. 2,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	8	10	98	45	11	173	173
Slope No. 5,	1	40	40	14	15	3	113	. . .	2	8	. . .	6	. . .	16	129
No. 2, Slope No. 6,	1	21	19	9	7	10	67	. . .	2	6	. . .	2	. . .	10	77
Slope No. 7,	1	37	34	17	7	6	102	. . .	2	7	. . .	2	. . .	11	113
Slope No. 8,	1	3	6	1	. . .	. . .	11	. . .	1	4	. . .	2	. . .	7	18
Upper Lehigh Slope No. 4,	1	32	44	5	14	4	100	1	3	12	54	23	. . .	93	193
Total,	5	133	143	46	43	23	393	2	18	47	152	80	11	310	703
J. C. Haydon & Co.															
Spring Mountain No. 1,	2	46	50	22	25	8	153	1	11	10	49	88	5	164	317
Spring Mountain No. 4,	2	54	62	25	31	5	179	1	11	12	57	125	. . .	206	385
Total,	4	100	112	47	56	13	332	2	22	22	106	213	5	370	702
Pardee Bros. & Co.															
Lattimer Slope No. 1,	. . .	9	2	5	2	2	20	. . .	. . .	. . .	. . .	43	8	51	71
Lattimer Slope No. 2,	1	29	10	23	6	2	71	4	13	13	31	78	. . .	139	210
Lattimer Slope No. 3,	2	9	118	24	15	5	173	4	14	14	162	186	. . .	380	553
Total,	3	47	130	52	23	9	264	8	27	27	193	307	8	570	834
Miscellaneous Companies.															
Sandy Run,	1	67	73	10	10	7	178	3	7	15	58	47	3	133	311
Pond Creek,	1	10	9	1	2	2	25	. . .	. . .	3	. . .	2	. . .	5	30
Mt. Pleasant,	1	27	25	10	5	2	70	1	5	15	55	75	6	157	227
Hollywood,	2	27	. . .	86	13	3	131	4	13	19	88	130	3	257	388
Yorktown,	2	32	35	76	10	. . .	155	3	13	10	80	128	3	237	392
Coleraine,	2	66	57	43	16	1	185	2	4	19	69	52	3	149	334
Honey Brook No. 2,	1	40	36	69	5	1	152	5	8	25	46	165	1	250	402
Beaver Brook,	1	78	93	22	13	6	216	1	8	25	100	89	6	229	445

TABLE III— *Continued.*

NAME OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Milnesville	1	43	23	9	2	1	79	1	11	23	108	425	4	578	657
Hazle Brook	2	48	27	43	17	6	143	1	4	10	68	28	2	113	256
Evans' colliery	1	40	18	11	2	1	73	1	4	4	16	56	1	82	155
Total	15	478	399	390	95	30	1,407	28	77	168	688	1,197	32	2,190	3,597

Recapitulation.

A. Pardee & Co.	7	463	187	89	128	39	913	6	68	81	328	227	10	720	1,633
Coxe Bros. & Co.	27	788	242	395	106	62	1,620	16	81	94	624	502	13	1,330	2,950
Lehigh Coal and Navigation Company	8	424	134	252	89	44	951	7	31	79	345	353	2	817	1,768
G. B. Markle & Co.	4	198	116	121	81	54	574	4	30	49	160	276	24	543	1,117
Linderman & Skeer	5	293	169	122	56	19	664	5	17	64	161	200	6	453	1,117
Upper Lehigh Coal Company	5	135	143	46	43	23	393	2	18	47	152	80	11	310	703
J. C. Haydon & Co.	4	100	112	47	56	13	332	2	22	22	106	213	5	370	702
Pardee Bros. & Co.	3	47	130	52	23	9	264	8	27	27	193	307	8	570	834
Miscellaneous companies	15	478	399	390	95	30	1,407	28	77	168	688	1,197	32	2,190	3,597
Total	78	2,924	1,632	1,514	677	293	7,118	78	371	631	2,757	3,355	111	7,303	14,421

TABLE IV—*List of Fatal Accidents occurring in the mines of the Fourth Anthracite district for the year ending December 31, 1890.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widows.	No. of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 11.	1	Matthew Kreski.	Outside laborer.	61	1	..	Beaver Meadow.	Carbon.	Fatally injured by fall of clay in stripping; died January 16.
28.	2	Otto Norvott.	Locomotive fireman.	22	..	..	Drifton No. 2.	Luzerne.	Killed by cars by falling when running to turn switch.
Feb. 21.	3	George Korechko.	Outside laborer.	25	..	..	Deringer.	..	Run over by cars in trying to get on; died Feb. 22.
Mar. 1.	4	Mattie Bochen.	Laborer.	26	..	..	Colliery No. 4.	Carbon.	Smothered by a rush of coal at the battery of breast.
5.	5	Valentine Molchik.	Outside laborer.	28	..	..	Yorktown stripping.	..	Killed by a fall of coal from slip in pillar.
11.	6	Andrew Kmetz.	Laborer.	35	1	1	Upper Lehigh No. 4.	Luzerne.	Killed by a fall of top coal while loading car.
15.	7	Henry Bock.	Engineer.	45	1	5	Hazleton mine.	..	Run over on slope; died same day.
20.	8	James Ryan.	Miner.	37	1	7	Eckley No. 10.	..	Foot crushed between cars; died March 29.
21.	9	Andrew Polifka.	Laborer.	35	1	3	Beaver Brook.	..	Killed by a fall of bony coal and slate.
Apr. 2.	10	John Namiets.	..	30	1	2	Yorktown.	Carbon.	Killed by a fall of coal from timber giving way.
2.	11	Joseph Gibson.	Loader.	20	..	..	Colliery No. 5.	..	Killed by being caught between car and chute.
7.	12	Joseph H. Ferry.	Mine foreman.	33	1	2	Hazleton mine.	Luzerne.	Killed; skull fractured by empty car at foot of slope.
15.	13	Michael McPhillips.	Miner.	55	1	2	Spring Mountain No. 1.	Carbon.	Killed by being struck by a mule and thrown under a car.
19.	14	Toney Bochichio.	Slate picker.	17	..	..	Colliery No. 4.	..	Killed by being caught and whirled around shaft of machinery.
23.	15	Thomas Boyle.	Loader.	22	..	..	Colliery No. 5.	..	Killed by being squeezed between car and chute.
26.	16	Andrew Furey.	Miner.	41	1	6	Highland No. 2.	Luzerne.	Killed by a fall of slate after firing shot in the same.
30.	17	Nicholas Landmesser.	..	34	1	4	Upper Lehigh No. 4.	..	Killed by a fall of coal while undermining the same.
May 19.	18	James McGlorey.	..	48	..	..	Number Three.	..	Squeezed by rush of coal; died May 25.
June 6.	19	William O. Donnell.	Outside laborer.	50	..	..	Yorktown stripping.	Carbon.	Smothered by a slide of coal dirt.
19.	20	Andrew Solak.	Laborer.	35	1	2	Yorktown colliery.	..	Killed by a fall of top bench.
26.	21	Andrew Thac.	Outside laborer.	21	..	..	Stockton stripping.	Luzerne.	Run over by cars in trying to get on them.
July 5.	22	William Ward.	Helper.	15	..	..	Cranberry.	..	Killed by mine truck running over his chest.
8.	23	Edward O. Donnell.	Locomotive fireman.	20	..	..	Drifton No. 2.	..	Killed by being jammed between locomotive and bar of iron.
14.	24	David Llewellyn.	Slate picker.	16	..	..	Colliery No. 5.	Carbon.	Killed by falling into breaker rolls.
23.	25	George Enofski.	Miner.	35	..	..	East Sugar Loaf No. 1.	Luzerne.	Killed by a sulphur ball from under which he was barring the coal.
Aug. 4.	26	James Bott.	..	47	1	..	Hazleton mine.	..	Killed; deceased lit two shots at the same time and one of them hung fire and killed him when he went back.
12.	27	Bernard McGeehan.	..	40	1	5	East Sugar Loaf No. 2.	..	Killed by a fall of rock from roof of gangway.
25.	28	Andrew Barlock.	..	45	1	2	Hollywood stripping.	..	Killed; top bench slid off and caught him under it.

TABLE IV—*Continued.*

Date of accident.	No. of accident.	NAME OF PERSON.	Occupation.	Age.	Widows.	No. of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
Aug. 26.	29	George Botcner,	Dumper.	25	. .	. .	Drifton No. 2.	Luzerne.	Killed; caught between car and cross stringer of breaker by engines starting while he was on car.
Sept. 2.	30	Edwin Willoughby,	Miner.	24	1	1	East Sugar Loaf No. 2.	"	Smothered by a rush of coal which broke down the manway.
3.	31	George Tropay,	Slate picker.	25	. .	. .	Stockton.	"	Squeezed between two cars; died September 5.
8.	32	Michael Leschick,	Laborer.	35	. .	. .	Yorktown,	Carbon.	Killed by a fall of top coal, from under which he had warned others not to go.
12.	33	Daniel Sweeney,	"	25	1	. .	Spring Mountain No. 1,	"	Killed by a fall of dividing rock in Wharton vein.
16.	34	Rudolph Lenhart,	Miner.	42	1	. .	Laurel Hill,	Luzerne,	Burned by an explosion of gas; died next day.
22.	35	Philip Henry,	"	33	1	3	Number Three,	"	Killed by a fall of roof rock in his gangway.
22.	36	George Haen,	Messenger boy,	15	. .	. .	Laurel Hill stripping,	"	Killed by an empty dirt car which he was walking towards and in front of which he stepped.
Oct. 8.	37	Joseph Nemitz,	Slate picker.	52	1	3	Eckley No. 5.	"	Killed by falling between building and belt wheel in trying to close a window in breaker.
16.	38	Charles Kildea,	Driver's helper, outside.	15	. .	. .	Stockton stripping,	"	Run over by cars in trying to get on the side of one.
Nov. 7.	39	Frank Bedner,	Outside laborer,	24	. .	. .	Lattimer stripping.	"	Injured internally by falling off a car with a stump which rolled on him; died November 9.
10.	40	Henry Lewis,	Miner.	28	1	. .	Deringer,	"	Injured by a fall of top coal; died November 14.
17.	41	Stephen Fellin,	Laborer.	26	. .	. .	Drifton No. 1.	"	Killed by a fall of rock in gangway.
24.	42	Michael Ross,	Outside laborer.	30	. .	. .	Laurel Hill,	"	Squeezed between car and post of breaker; died same day.
27.	43	Michael Sargeant,	Roadman,	58	1	1	East Sugar Loaf No. 6,	"	Squeezed between car and collar on slope; died next day.
Dec. 8.	44	Herman Roth,	Locomotive helper,	16	. .	. .	Beaver Brook,	"	Killed; slipped on ice and fell under a locomotive.
8.	45	James Regorer,	Driver.	20	. .	. .	Spring Mountain No. 4.	"	Kicked by a mule; died next day.
12.	46	John Noll,	Outside laborer.	50	. .	. .	Cranberry,	"	Squeezed between conveyors and building; died December 28.
12.	47	Patrick Gallagher,	Loader.	20	. .	. .	Colliery No. 9,	Carbon.	Killed by falling under cars at breaker.
15.	48	Andrew Yonanski,	Miner.	27	2	2	Yorktown,	"	Killed instantly by a fall of roof rock from the breast in which they were working.
15.	49	Paval Kenderis,	Laborer.	35	1	1			
15.	50	John Ondarko,	"	23	. .	. .			
16.	51	William Myers,	Jig tender.	15	. .	. .	Deringer.	Luzerne.	Killed; caught by his clothes or hands between belt and wheel and whirled around shafting.
27.	52	Charles Fredrickson,	Top foreman.	42	1	6	Hanto Screen Building.	Carbon.	Killed by runaway truck on plane to building.

Recapitulation of Fatal Accidents.

Occupation.	Number.	Per cent.	Nationality.	Number.	Per cent.	Causes of Accident.	Number.	Per cent.
Mine foreman	1	1.9	Hungarian	11	21.1	By explosions of gas	1	1.9
Miners	14	27.0	Irish	10	19.2	By falls of coal, roof and sides	19	36.5
Mine laborers	10	19.2	American	8	15.4	By cars underground and on surface	19	36.5
Drivers	1	1.9	Polish	7	13.5	By blast and powder explosions	1	1.9
Door boys	1	1.9	German	5	9.6	By machinery underground and on surface	7	13.5
Roadmen	1	1.9	Italian	4	7.7	By falls of coal or clay on strippings	4	7.8
Outside foreman	1	1.9	English	2	3.9	By miscellaneous causes	1	1.9
Outside laborers	8	15.4	Welsh	2	3.9		52	100
Loaders	3	5.8	Austrian	1	1.9			
Engineers and firemen	3	5.8	Danish	1	1.9			
Top men	1	1.9	Greek	1	1.9			
Slate pickers	5	9.6						
Helpers and messengers	3	5.8		52	100			
	52	100						

TABLE NO. V—*List of Non-Fatal Accidents occurring in the mines of the Fourth Anthracite District for the year ending December 31, 1890.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Name of colliery.	Location--County.	Nature and cause of accident.
Jan. 10.	1	Fred Reed.	Miner.	45	Laurel Hill.	Hazleton, Luzerne.	Slightly burned by an explosion of gas.
11.	2	Michael Amack.	Laborer.	31	Highland No. 1.	Highland, Luzerne.	Foot hurt by a piece of coal rolling on it.
11.	3	George Kanuch.	"	48	Beaver Meadow.	Beaver Meadow, Carbon.	Leg broken by a fall of clay on stripping.
20.	4	Joseph Petria.	"	26	Milnesville.	Milnesville, Luzerne.	Leg broken by being struck by a rock on stripping.
22.	5	James O. Donnell.	Loader.	22	South Sugar Loaf.	Hazleton, Luzerne.	Squeezed between cars and breaker.
27.	6	Evan Morgan.	Miner.	49	Tomhicken.	Tomhicken, Luzerne.	Leg broken by a prop falling on it.
29.	7	John Filindo.	Roadman.	31	Drifton No..	Drifton, Luzerne.	Finger cut off by being caught between spike-bar and rail.
Feb. 3.	8	Josiah Berreman.	Outside carpenter.	18	Lattimer.	Lattimer, Luzerne.	Leg broken; fell from the engine house.
3.	9	Joseph Hudock.	Laborer.	26	Number Six.	Hazleton, Luzerne.	Leg broken by a fall of clay on stripping.
5.	10	Peter Graham.	Door-boy.	15	Laurel Hill.	" "	Collar bone broken by being caught between car and door frame.
6.	11	John Parkinto.	Miner.	35	"	" "	Slightly burned on face, neck and hands by an explosion of gas.
11.	12	James Burke.	Driver.	16	East Sugar Loaf No. 2.	Stockton, Luzerne.	Bruised by being caught between cars.
11.	13	Pasco Greeko.	Outside laborer.	30	Lattimer.	Lattimer, Luzerne.	Finger cut off by wrench while dumping cars.
11.	14	John Buchko.	Jig tender.	20	Stockton.	Stockton, Luzerne.	Arm badly squeezed between pulley and timbers.
12.	15	George Youngcourt.	Car carpenter.	16	Cranberry.	Hazleton, Luzerne.	Arm fractured by being caught between car and prop.
13.	16	Leopold Berliner.	Outside laborer.	68	Jeddo Machine shop.	Jeddo, Luzerne.	Leg fractured by a piece of iron falling from car.
14.	17	Charles Ward.	Laborer.	19	Mt. Pleasant.	Mt. Pleasant, Luzerne.	Seriously injured about the hips by a fall of clod.
15.	18	Albert Granger.	Miner.	32	Colliery No. 1.	Nesquehoning, Carbon.	Leg fractured by a fall of coal.
17.	19	Frank Horn.	"	30	"	" "	Back injured by a fall of coal.
Mar. 5.	20	John Miga.	"	29	Beaver Meadow.	Beaver Meadow, Carbon.	Leg fractured by a fall of slate and bone coal.
11.	21	Charles Schroeder.	"	27	Upper Lehigh No. 4.	Upper Lehigh, Luzerne.	Leg fractured by a fall of coal.
14.	22	John Fragon.	"	..	Laurel Hill.	Hazleton, Luzerne.	Both burned about hands and face by an explosion of gas.
14.	23	Fred Luckanow.	Laborer.	..	"	" "	
20.	24	Christian Eiser.	"	21	Number Six.	" "	Severely injured; squeezed by the steam shovel.
21.	25	Henry Youngkort.	Mine foreman.	46	Number Three.	" "	Leg fractured; slipped and fell in the mines.
21.	26	Hugho Rowenins.	Foreman.	52	Colliery No. 1.	Nesquehoning, Carbon.	Leg broken in two places by log rolling on him on timber bank.
24.	27	James O. Donnell.	Miner.	45	Jeddo No. 3.	Jeddo, Luzerne.	Back bruised and head cut by a fall of coal.
25.	28	Angello Salvetera.	"	28	Deringer.	Deringer, Luzerne.	Leg fractured by a piece of coal flying from a blast.
28.	29	Condy McLaughlin.	"	54	Drifton No. 1.	Drifton, Luzerne.	Two ribs fractured by a fall of slate.
31.	30	John Hebll.	Car boss.	50	East Sugar Loaf No. 2.	Stockton, Luzerne.	Fell on the breaker and badly bruised, no bones broken.

	31.	31	William J. Matthews,	Miner,	35	East Sugar Loaf No. 6,	" "	Collar-bone fractured by a lump of coal.
	31.	32	Charles Frederick,	Laborer,	35	Colliery No. 1,	Nesquehoning, Carbon,	Leg broken by being kicked by a mule and thrown under a moving car.
Apr.	2.	33	John Brennan,	Miner,	33	Drifton No. 2,	Drifton, Luzerne,	Both burned on hands and face by an explosion of gas.
	2.	34	James Brennan,	"	29	"	" "	
	2.	35	John Gallagher,	Slate picker,	13½	Highland No. 1,	Highland, Luzerne,	Bruised by being squeezed between car and breaker.
	3.	36	Robert J. Reese,	Brakeman,	16	Cranberry,	Hazleton, Luzerne,	Squeezed about the hips between locomotive and timber.
	4.	37	Eckert Yannkerth,	Roadman,	30	Hazle Brook,	Hazle Brook, Luzerne,	Leg broken by rail flying up and striking him.
	7.	38	Nicholas Lorcheim,	Miner,	43	Hazleton mine,	Hazleton, Luzerne,	Leg fractured by a fall of clod.
	11.	39	Urich Lutz,	"	43	Deringer,	Deringer, Luzerne,	Leg broken and thumb fractured by a fall of rock.
	11.	40	George Strojinch,	Engineer,	20	Cranberry,	Hazleton, Luzerne,	Eye fractured by being struck by a piece of coal.
	15.	41	John Fazinelli,	Miner,	35	Drifton No. 1,	Drifton, Luzerne,	Leg broken by a fall of top slate.
	15.	42	John Gallagher,	Driver,	25	Drifton No. 2,	" "	Leg fractured by part of a stone wall falling on him.
	16.	43	George Smithorke,	Laborer,	20	Beaver Brook,	Beaver Brook, Luzerne,	Leg broken by being caught between two cars.
	19.	44	Thomas Ryan,	"	25	Spring Mountain No. 1,	Jeanesville, Carbon,	Injured by coal falling from side of gangway.
	22.	45	John Cohoot,	"	25	"	" "	Arm broken by trying to couple moving cars.
	23.	46	Theodore Thomas,	Oiler,	16	Jeddo No. 4,	Jeddo, Luzerne,	Leg crushed by cars so that amputation was necessary.
	26.	47	William Morgan,	Miner,	35	Tomhicken,	Tomhicken, Luzerne,	Finger broken by a fall of slate.
	26.	48	John Legon,	Laborer,	37	Beaver Meadow,	Beaver Meadow, Carbon,	Head cut and bruised, thigh dislocated and rib broken by a fall of top clod.
	28.	49	Andrew Litavets,	Miner,	35	Drifton No. 2,	Drifton, Luzerne,	Hurt about the face and body by coal from a premature blast.
May	1.	50	John Hoebner,	Engineer,	34	Hazleton mine,	Hazleton, Luzerne,	Wrist cut by piece of coal falling on it.
	2.	51	Nicholas Weigand,	Loader,	35	"	" "	Skull fractured by being struck by a crank flying out of his hands while he was using it to open doors of railroad cars.
	5.	52	Matthew Walysiris,	Miner,	40	"	" "	Hip fractured and burned by an explosion of gas.
	5.	53	William Hoffman,	Laborer,	45	Deringer,	Deringer, Luzerne,	Bruised and collar-bone broken by being caught between car and timber.
	14.	54	Michael Princh,	"	45	Lattimer,	Lattimer, Luzerne,	Rib and arm fractured by flying coal from blast.
	20.	55	William Phillips,	Driver,	15	Cranberry,	Hazleton, Luzerne,	Leg broken by a mule falling on him.
	23.	56	John Reed,	"	18	Hazleton mine,	" "	Squeezed about the chest between car and timbers.
	27.	57	John Brusawk,	Oiler,	28	Drifton No. 2,	Drifton, Luzerne,	Foot and leg crushed; slipped in rolls.
	27.	58	William Phillips,	Miner,	40	Colliery No. 1,	Nesquehoning, Carbon,	Arm broken by a fall of coal.
June	5.	59	Stanley Ravinski,	Oiler,	20	Eckley No. 5,	Eckley, Luzerne,	Thigh broken by a piece of coal at foot of slope.
	6.	60	John Rhoda,	Driver,	16	Upper Lehigh No. 4,	Upper Lehigh, Luzerne,	Collar bone broken; caught between car and mule in unhitching.
	12.	61	Stephen Ankle,	Laborer,	23	Cranberry,	Hazleton, Luzerne,	Injured by a fall of slate.
	13.	62	Thomas Earley,	Miner,	48	Sandy Run,	Sandy Run, Luzerne,	Two ribs broken by flying coal from a shot he was going back to, expecting it missed.
	16.	63	Henry Waldron,	Laborer,	29	Upper Lehigh No. 6,	Upper Lehigh, Luzerne,	Leg and arm broken by a fall of top coal.
	19	64	Paval Mucha,	"	30	Yorktown,	Yorktown, Carbon,	Back and head cut by a fall of coal.
	19,	65	Cassimus Royic,	"	25	"	" "	Foot badly bruised.
	21.	66	William Nilles,	Driver,	18	Hazleton mine,	Hazleton, Luzerne,	Finger crushed by being caught between spreader and car.
	21,	67	William Rimer,	Door-boy,	15	"	" "	Leg crushed between cars.
	25,	68	Bernard Boyle,	Miner,	46	Jeddo No. 3,	Jeddo, Luzerne,	Leg broken by a large piece of coal rolling on it.
	26.	69	James Cannon,	Helper,	16	Hazleton mine,	Hazleton, Luzerne,	Foot badly bruised by car running over it.
July	2.	70	Frank Burke,	Miner,	44	Eckley No. 10,	Eckley, Luzerne,	Broke three ribs by falling with his buggy into chute.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Name of colliery.	Location—County.	Nature and cause of accident.
July 7,	71	Michael Revick,	Laborer,	25	East Sugar Loaf No. 5,	Stockton, Luzerne,	Lost an eye and disfigured his face for life by lighting two shots at the same time, one of which exploded just as he came back.
8,	72	John Carr,	Miner,	35	Eckley No. 5,	Eckley, Luzerne,	Collar bone broken by a fall of coal.
8,	73	Ambrose Dresher,	Driver,	16	Lattimer,	Lattimer, Luzerne,	Foot badly bruised between car wheel and rail.
12,	74	Michael Frierer,	Laborer,	40	Jeddo No. 4,	Jeddo, Luzerne,	Skull fractured by flying coal from a blast.
14,	75	Edward McGee,	Miner,	28	East Sugar Loaf No. 5,	Stockton, Luzerne,	Injured by a fall of clod.
21,	76	Charles Cannon,	"	37	Number Three,	Hazleton, Luzerne,	Struck on the head by a buggy as he stooped to drive a wedge.
22,	77	Andrew Hines,	"	35	Colliery No. 1,	Nesquehoning, Carbon,	Burned on hands and face by an explosion of gas.
25,	78	Lewis Meiss,	Driver,	20	Cranberry,	Hazleton, Luzerne,	Arm broken, face and back bruised; fell between cars.
26,	79	Pasco Lattear,	"	18	Lattimer,	Lattimer, Luzerne,	Lost his arm by dirt truck, from which he slipped, running over it.
28,	80	Domenico Pretter,	Miner,	57	Gowen No. 3,	Gowen, Luzerne,	Rib broken; piece of false bottom slid down against him.
30,	81	John Boulanger,	Laborer,	28	Spring Mountain No. 1,	Jeanesville, Carbon,	Head and foot bruised by fall of top coal.
31,	82	Andrew Brannigan,	Pump-boy,	16	Jeddo No. 3,	Jeddo, Luzerne,	Lost his arm by getting it into machinery of pump.
Aug. 2,	83	Andrew Hosko,	Laborer,	26	Hollywood stripping,	Hollywood, Luzerne,	Squeezed badly between loaded and empty cars.
4,	84	Oliver Longenbecker,	Locomotive fireman,	27	Tomhicken,	Tomhicken, Luzerne,	Arm broken in two places by being caught by cars in making a flying switch.
12,	85	Charles Kruge,	Miner,	28	Highland No. 1,	Highland, Luzerne,	Back and hip bruised by piece of sulphur falling from roof.
14,	86	James Melon,	Assistant loader,	17	"	" "	Both legs broken below knees by falling under railroad car and being struck by brake cross-piece.
21,	87	Adam Helbig,	Slate picker,	14	Laurel Hill,	Hazleton, Luzerne,	Right leg broken by being caught and whirled by shaft in playing with it.
23,	88	Christian Myron,	Door-boy,	15	Hazleton Mine,	" "	Index finger torn off by being caught between door and mules.
23,	89	Thomas Kowso,	Driver,	18	Lattimer stripping,	Lattimer, Luzerne,	Slightly injured; car jumped the track and struck him.
24,	90	Charles Gaddis	Top shaftman,	25	Colliery No. 1,	Nesquehoning, Carbon,	Arm cut off by ash cars from boiler room.
27,	91	William Goldsworthy,	Miner,	48	Laurel Hill,	Hazleton, Luzerne,	Squeezed about the body by loose coal in his breast.
28,	92	Patrick Sweeny,	Driver,	19	Drifton No. 1,	Drifton, Luzerne,	Both legs run over by pea coal car.
30,	93	Albert Witchiniski,	Slate loader,	60	Laurel Hill,	Hazleton, Luzerne,	Injured by a fall; plank along water trough broke.

Sept. 3,	94	John Orfield,	Loader,	27	Hollywood,	Hollywood, Luzerne,	Lost his arm in making coupling between gondola and locomotive.
4,	95	Mark Kakes,	Driver,	17	Laurel Hill,	Hazleton, Luzerne,	Arm broken by being caught between car and brattice.
6,	96	Michael Shangarl,	Laborer,	49	Tomhicken,	Tomhicken, Luzerne,	Rib broken by fall of coal from face of gangway.
8,	97	Patrick Ward,	"	22	Hazleton mine,	Hazleton, Luzerne,	Cut on head, face, shoulder and hip by coal falling from side of gangway.
16,	98	Charles Wright,	"	15	"	" "	Thumb taken off while uncoupling cars while they were in motion.
16,	99	Albert Bain,	"	36	Laurel Hill,	" "	Burned by an explosion of gas in his breast.
17,	100	Bernard Boyle,	Driver,	18	"	" "	Leg badly bruised; caught between loaded and empty cars.
22,	101	Michael Vashinko,	Laborer,	25	Drifton No. 2,	Drifton, Luzerne,	Leg broken below knee; Michael and four others were carrying a prop on their shoulders and when they threw it off, it rebounded against his leg.
25,	102	Andrew Bancor,	Loader,	24	Hollywood,	Hollywood, Luzerne,	Right shoulder dislocated and arm bruised between car and breaker.
26,	103	Edward Tobin,	Miner,	40	Spring Mountain No. 4,	Jeanesville, Luzerne,	Burned on arms and hands with powder exploded by himself.
Oct. 2,	104	George Shippa,	"	30	Eckley No. 5,	Eckley, Luzerne,	Right leg broken below knee by slate which he was barring down.
7,	105	Condey Harley,	Driver,	27	Stockton,	Stockton, Luzerne,	Toes of right foot mashed by car while trying to unhitch a mule.
11,	106	George Boonheiser,	Miner,	21	Humboldt,	Humboldt Luzerne,	Left leg broken below knee by fall of coal from slip in cross-heading.
15,	107	David Williams,	Locomotive helper,	14	Lattimer stripping,	Lattimer mines, Luzerne,	Bruised about body and legs by bumper of locomotive from which he fell.
21,	108	Charles Boner,	Miner,	24	Hazleton mine,	Hazleton, Luzerne,	Slightly burned by an explosion of gas in his breast, back and hands burned.
21,	109	George Oshman,	"	25	"	" "	Severely burned by same on ears, face and hands.
21,	110	Daniel Scanlan,	Runner,	18	Lattimer stripping,	Lattimer mines, Luzerne,	Leg bruised by car jumping track and falling on him.
27,	111	Moses Woodring,	Fire-boss,	46	Highland No. 2,	Highland, Luzerne,	Burned on face and hands by explosion of gas lighted by himself.
27,	112	Joseph Patterson,	Miner,	45	Deringer,	Deringer, Luzerne,	Burned on face and hands by explosion of gas fired by a blast in his breast.
28,	113	Michael Maloney,	"	50	Beaver Brook,	Beaver Brook, Luzerne,	Burned on body and hands by powder exploded by himself.
Nov. 3,	114	George Ernest,	Driver,	23	Tomhicken,	Tomhicken, Luzerne,	Wrist bone broken by being caught between cars and mules.
4,	115	John Gilshen,	"	18	Drifton No. 1,	Drifton, Luzerne,	Toes mangled by being run over by a car he was driving.
6,	116	Michael John,	Laborer,	22	Hollywood stripping,	Hollywood, Luzerne,	Leg fractured by falling off trestle where he was employed.
6,	117	John Urich,	Miner,	27	East Sugar Loaf No. 6,	Stockton, Luzerne,	Burned by an explosion of gas.
10,	118	Owen McElwee,	Slate picker,	13	Lattimer No. 3,	Lattimer mines, Luzerne,	Leg bruised and sprained by being caught by screen while playing.
11,	119	John Evon,	"	13	East Sugar Loaf No 2,	Stockton, Luzerne,	Leg cut off at ankle by locomotive while playing at noon.
19,	120	John O'Donnell,	Laborer,	28	Evans' colliery,	Beaver Meadow, Carbon,	Injured by coal falling from pillar and striking him.
20,	121	Michael Gustin,	Driver,	42	Milnesville,	Milnesville, Luzerne,	Leg broken by being struck by the head of his mule which had fallen.
27,	122	Paul Emery,	Laborer,	23	Beaver Meadow,	Beaver Meadow, Carbon,	Leg broken below knee by being run over by dirt car.

TABLE V—*Continued.*

Date of accident.	Number of accident.	NAME OF PERSON.	Occupation.	Age.	Name of colliery.	Location—County.	Nature and cause of accident.
Nov. 28.	123	Owen J. Rowlands.	Miner.	49	Upper Lehigh No. 7.	Upper Lehigh, Luzerne.	Back and left side bruised by fall of top coal.
28.	124	Chris Miller.	"	34	Drifton No. 2.	Drifton, Luzerne.	Lost a finger by a rush of coal at his battery.
Dec. 1.	125	John Sandoe.	Driver.	20	Beaver Meadow.	Beaver Meadow, Carbon.	Small bone of arm broken by being twisted around the car.
4.	126	Michael Mardenak.	Laborer.	25	Yorktown.	Yorktown, Carbon.	Injured by a fall of top coal; no bones broken.
6.	127	Albert Brezenski.	Latch tender.	15	Highland No. 1.	Highland, Luzerne.	Small bone of leg broken; caught between car and side of gangway.
6.	128	Henry Koch.	Miner.	23	Cranberry.	Hazleton, Luzerne.	Cut his foot badly; ax glanced from prop he was cutting.
8.	129	Robert Houser.	Slate picker.	12	Hazleton mine.	" "	Right arm broken near wrist; he slipped from ladder in breaker.
9.	130	Domenica Parrico.	Laborer.	35	Spring Mountain No. 4.	Jeanesville, Luzerne.	Injured his foot; he exploded a cartridge of dynamite by jumping on it.
11.	131	John Gallagher.	Oiler.	16	Highland No. 2.	Highland, Luzerne.	Skull fractured; a lever fell on him while helping to put a car on road.
16.	132	Charles Sutton.	Miner.	45	Upper Lehigh No. 6.	Upper Lehigh, Luzerne.	Left leg broken above ankle by a fall of top coal.
16.	133	Frank Boyle.	Slate picker.	13	Spring Mountain No. 4.	Jeanesville, Luzerne.	His arm badly sprained; caught between belt and wheel of jig.
24.	134	Pasquel Presnart.	Dumper.	25	Number Three.	Hazleton, Luzerne.	Leg broken by being caught by the gate of the rock chute.

Recapitulation of Non-Fatal Accidents.

Occupation.	Number.	Per cent.	Nationality.	Number.	Per cent.	Causes of Accident.	Number.	Per cent.
Mine-foremen and fire-bosses. . . .	2	1.5	American, ...	32	23.9	By explosion of gas, ...	14	10.4
Miners, ...	42	31.3	Irish, ...	26	19.4	By falls of roof and sides, ...	41	30.6
Mine laborers, ...	24	17.9	German, ...	21	15.7	By cars inside and outside, ...	38	28.4
Drivers and runners, ...	21	15.7	Hungarian, ...	19	14.3	By machinery inside and outside, ...	14	10.4
Door-boys and helpers, ...	5	3.7	Polish, ...	13	9.7	By coal flying from blasts and explosion of powder, ...	9	6.7
Roadmen and carpenters, ...	4	3.0	Italian, ...	11	8.2	By miscellaneous causes inside, ...	8	6.0
Outside foremen, ...	2	1.5	Welsh, ...	5	3.7	By miscellaneous causes outside, ...	10	7.5
Engineers, pumpmen and firemen, . .	4	3.0	Austrian, ...	3	2.2			
Outside laborers, ...	12	8.9	English, ...	2	1.5			
Loaders, ...	6	4.5	Russian, ...	1	0.7	Total, ...	134	100
Slate pickers, ...	8	6.0	Swede, ...	1	0.7			
Oilers, ...	4	3.0						
Total, ...	134	100	Total, ...	134	100			

FIFTH ANTHRACITE DISTRICT.

(SCHUYLKILL COUNTY.)

OFFICE OF INSPECTOR OF MINES,
SHENANDOAH, *April 24, 1891.*

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: In compliance with the act of assembly, approved June 30, 1885, I have the honor of herewith submitting to you my sixth annual report as inspector of mines of the Fifth Anthracite coal district for the year 1890.

This report shows an increase in production of 1,015,990 tons of coal, compared with the year 1889. The shipments have also increased 906,489 tons. Part of this increase is due to the fact that the Lehigh and Wilkes-Barre Nos. 4 and 5 collieries as well as Silver Brook colliery were reported with the report of Fourth inspection district for the past three years.

The number of fatal accidents is sixty-six, leaving thirty-one widows and one hundred and ten orphans. The non-fatal accidents number ninety-seven. The accompanying tables give comparative statements relative to this report, and a careful perusal of them will readily show that seventy-two per cent. of the fatal accidents would not have occurred had even ordinary precautionary measures been observed on the part of the operatives.

We have a good mine law and many of our miners advocate its revision and yet they are violating its provisions every day; and when we consider the fact, that if the workingmen would have observed and obeyed the law during the year 1890, we would have had only eighteen deaths to record instead of sixty-six. Surely these figures ought to be an incentive for them to obey the law, instead of clamoring for its revision. I am also aware of the fact that some mine foremen do not observe the law as they should, and consequently contribute towards the accidents, but the largest percentage of deaths are the result of carelessness on the part of the workmen themselves.

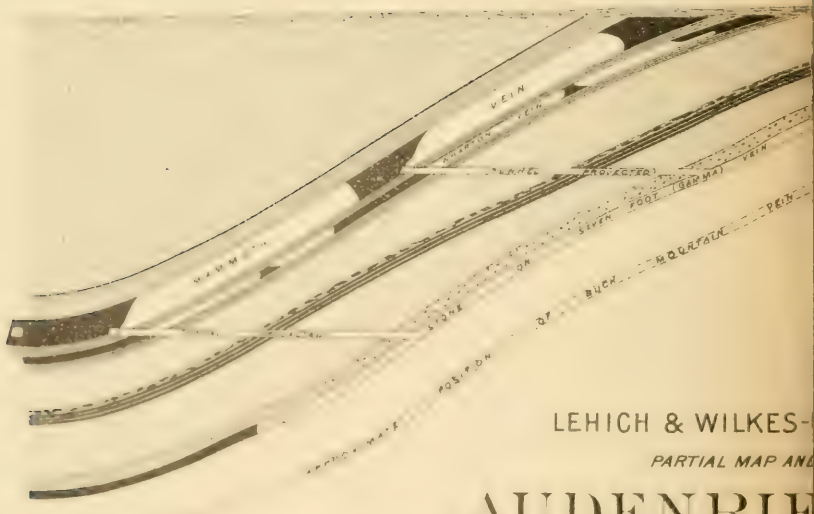
I will here give one experience of the law being violated, which was brought to my notice a short time ago. I learned that some of the miners working in a colliery where safety lamps were absolutely used, lit their squibs with matches. I investigated the matter and found it to be true; in talking with the miner he said, he did not do it any more. What do you do now I asked, his reply was, "I suck the flame through the gauze with my pipe, then put the squib in my pipe when I am going to fire a shot." I threatened to have him arrested when his "Butty" appealed, saying at the same time there is worse than that done in this colliery, and with some persuasion he very reluctantly told me that some of the men unscrewed the gauze with a nail and worked with the naked flame. This was a very alarming statement, because it endangered the lives of all in the colliery, and the practice may have caused the loss of many lives elsewhere from explosion of gas.

WILLIAM STEIN,
Mine Inspector.

I am happy to state that greater precautionary measures are being instituted throughout my district to prevent mine fires. At many of our collieries where we have no gas, the workmen are obliged to ride up and down the slopes with a Channy safety lamp or a lantern, thus preventing a spark from a naked lamp coming in contact with the dry timber, which has occasionally been the cause of extensive mine fires.

On the 28th of August a fire originated at the bottom of Packer No. 3 slope from a miner's lamp. A party of men had been retimbering in No. 8 lift, and after they quit work smoke was seen issuing from an outlet near to the hoisting slope, and for some time it was feared that it could not be extinguished unless by drowning the colliery, which meant serious loss to both operator and operative. On the 29th I visited the colliery in company with Col. D. P. Brown, the superintendent, and found that the fire had ignited the coal just where the vein inverts itself, and the coal being firable at this point, it was easily displaced by the heat which increased the fire for some time, but it being in close proximity to the lower pump, attachm ents were made to it, and the water forced directly over the fire. Mr. James Irvin and his men worked heriocally night and day under the supervision of Mr. Brown, the superintendent, and Mr. Heber S. Thompson, engineer of the Girard estate, who, with their combined plans and efforts succeeded in extinguishing the fire on the 31st. Safety lamps are now used where it is necessary to timber in dry places, and this ought to be made a universal practice.

On the 13th of July the water in the Stanton slope on the north side of the Mahoney Valley was successfully tapped into the Lawrence colliery.



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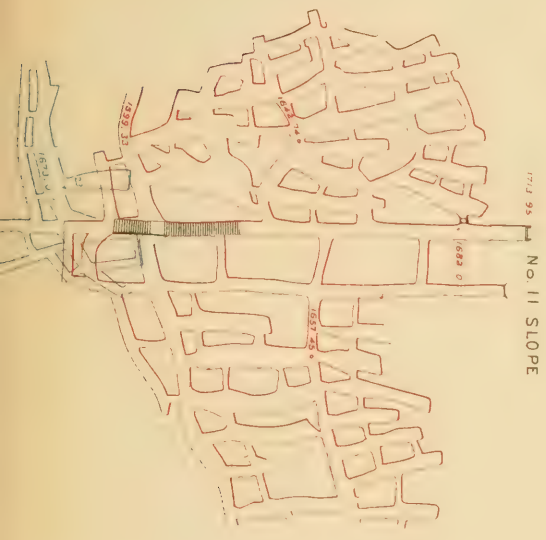
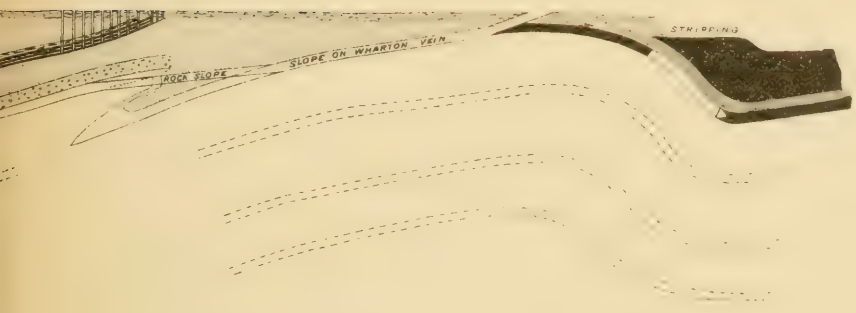
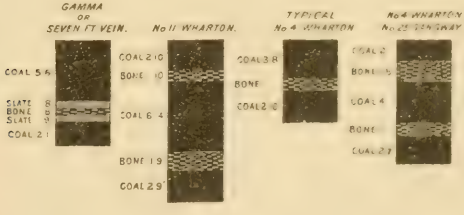






RRE COAL CO.

ECTION OF

D BASIN,

ON AT

OPE.

J. H. DUGAN Eng.

The water had a vertical height of 400 feet or equal to a pressure of 173 pounds per square inch, or 11 tons per square foot.

The remaining lift to be worked in the basin of the Stanton colliery, was leased to Messrs. Lawrence & Brown, in October, 1889, and in order to reach this lift of coal it was necessary to drive a tunnel across the basin from the North to the South dip a distance of 75 yards. Two parallel openings were then driven up in the Skidmore vein, which underlies the Mammoth vein, the rock strata between these two veins measuring 52 feet at right angles. These two openings were connected at intervals with cross-headings so as to conduct the air up to the workingmen, and so that one of them would also serve as a dry retreat for the men in the event of tapping the water. After driving up in the Skidmore a distance of 90 yards, a tunnel was driven at right angles in the rock strata a distance of 27 feet, when a bore-hole two inches in diameter was commenced passing through 28 feet of hard rock and 24 feet of coal, making the total length of bore-hole 52 feet when the water was tapped. During the progress of this work I visited this colliery twice a week and every precaution was taken to prevent accidents. Messrs. Lawrence & Brown put four new pumps in position, of Goyne type, diamater of plunger 15 inches, length of stroke 4 feet. The tapping of this water gives to the Lawrence colliery a lift on the Mammoth vein alone 2,200 yards in length and 80 yards wide; thickness of vein 12 yards.

Table No. 1—*Showing comparative statement of fatal casualties for the years 1889 and 1890.*

Causes of Accidents.	Years.	
	1889.	1890.
Explosions of fire-damp,	4	3
Explosions of blasting material,		1
Premature explosions,		2
Falls of coal and roof,	32	22
Crushed by mine cars,	6	14
By machinery on surface,	2	
Falling down shafts and slopes,		6
By coal flying from shots,	1	2
Suffocated by gas,	2	4
Miscellaneous,	13	12
Totals,	60	66

NUMBER OF FATAL ACCIDENTS AND AMOUNT OF COAL PRODUCED PER LIFE LOST.

NAMES OF FIRMS.	Number of fatal accidents.	Tons of coal produced per fatal accident.
Philadelphia and Reading Coal and Iron Company,	34	109,967
Lehigh Valley Coal Company,	6	79,798
Lehigh and Wilkes-Barre Coal Company,	5	88,596
Lentz, Lilly & Co.,	5	52,200
Coxe Bros. & Co.,	6	1,986
Individual firms,	10	130,329

TABLE NO. 2 - *Showing comparative statement of non-fatal casualties for for the years 1889 and 1890.*

	YEARS.	
	1889.	1890.
Explosions of fire-damp,	14	18
Explosions of blasting material,	2	4
Premature explosions,	. . .	2
Falls of coal and roof,	32	38
Crushed by mine cars,	15	12
Falling down shafts and slopes,	2	. . .
By coal flying from shots,	1	1
Miscellaneous,	17	22
Totals,	83	97

TABLE NO. 3 - *Showing the quantity of coal produced and shipped during the years 1889 and 1890.*

	YEARS.	
	1889.	1890.
Quantity of coal produced, in tons,	5,220,464	5,236,554
Quantity of coal shipped, in tons,	4,881,269	5,787,758

TABLE NO. 4—*Comparative table between the years 1889 and 1890.*

	YEARS.	
	1889.	1890.
Number of persons employed,	15,916	19,289
Tons of coal produced per life lost,	87,007.7	94,491 8/11
Ratio of employes per life lost,	265.2	292 1/4
Number of tons of coal mined per each personal injury,	36,506.7	38,260
Average number of tons of coal mined per employe,	306.6	323.6
Ratio of employes per each personal injury,	111.3	197.7

TABLE NO. 5—*Taking the death-rate per thousand as a basis of comparison between the different companies and individual operators we have the following ratio for the year 1890.*

NAMES OF FIRMS.	Number of employes.	Number of deaths.	Death-rate per thousand.
Philadelphia and Reading Coal and Iron Co.,	12,364	34	2.75
Lehigh Valley Coal Company,	1,582	6	4+
Lehigh and Wilkes-Barre Coal Company,	1,114	5	4.5—
Lentz, Lily & Co.,	674	5	7.4
Coxe Bros. & Co.,	217	6	27.6
Individual firms,	3,338	10	2.99
Totals,	19,289	66	8.2

TABLE No. 6—*Comparative statement of fatal and non-fatal casualties and their causes for five years.*

CASUALTIES.	1886.	1887.	1888.	1889.	1890.	Total for five year.
Fatal.						
Explosions of fire-damp,	1	2	1	4	3	
Explosions of blasting material,	3	1	1		1	
Premature explosions,	2	1	3		2	
Falls of coal and roof,	21	31	22	32	22	
Crushed by mine cars,	5	9	8	6	14	
By coal flying from shots,				1	2	
By machinery on surface,		2	2	2		
Falling down shafts and slopes,	1	1	1		6	
Suffocated by gas (carbonic acid),				2	4	
Explosion of boilers,	1					
Miscellaneous,	6	8	6	13	12	
Totals of the respective years,	41	55	44	60	66	266
Non-Fatal.						
Explosions of fire-damp,	3	8	20	14	18	
Explosions of blasting material,	6	6	5	2	4	
Premature explosions,	4	2	6		2	
Falls of coal and roof,	30	41	30	32	38	
Crushed by mine cars,	25	22	23	15	12	
By coal flying from shots,	1	2	6	1	1	
By machinery on surface,	3	2				
Falling down shafts and slopes,	1	2		2		
Explosion of boilers,		1				
Miscellaneous,	28	17	22	17	22	
Totals of the respective years,	101	105	112	83	97	498

TABLE NO. 7—*Comparative Statement of Casualties and Employes for five years.*

	Killed.	Injured.	Total.	Total number of employes.	Number of employes to each casualty.	Number of tons of coal mined to each fatal casualty.	Number of tons of coal mined to each non-fatal casualty.	Ratio of tons of coal to each casualty.	Number of tons of coal mined to each employe.	Total number of tons of coal mined.
1886,	41	105	142	15,191	106.97	121,280	49,232	35,017	320⅔	4,972,502.07
1887,	55	105	162	14,608	91.3	98,117	51,394	33,727	369	5,396,445.04
1888,	44	112	156	15,652	100.3	122,163	47,992	34,456	343.4	5,375,185.05
1889,	60	83	143	15,916	111.3	87,007.7	58,810.4	34,134	306.6	5,220,464
1890,	66	97	163	19,289	118	94,491 8/11	64,293+	38,260+	323.6	6,236,554
Totals,	266	502	766	80,656	527.06	523,058	271,721	175,594	1,661	27,201,150
Average,	53⅕	100⅖	153⅕	16,131⅕	105.41	104,611⅗	54,344⅕	35,118⅘	332⅕	5,440,230

The Sydney Coal Company, operating a washery at Maizeville, shipped 67,500 tons to market, which would make 5,855,258 tons actually shipped from this district

Total number of persons employed inside and outside and their description of service:

INSIDE.

Inside foreman,	120	
Miners,	4,954	
Miners' laborers,	2,229	
All other company men,	2,680	
Drivers,	767	
Door boys and helpers,	304	
Total inside,		11,054

OUTSIDE.

Outside foreman,	54	
Blacksmiths and carpenters,	417	
Engineers and firemen,	583	
Slate pickers,	4,168	
All other company men,	2,929	
Superintendents and clerks,	84	
Total outside,		8,235
Total inside and outside,		19,289
Number of tons of coal produced,		6,236,454
Number of tons of coal shipped,		5,787,758
Average number of days worked,		205

FATAL ACCIDENTS.

John Bernesky, miner, Pole, thirty-four years of age, was instantly killed by falling down No. 2 slope, Oneida, on the 16th of January. It would appear he had been in the habit of taking coal home from the mines when he had finished his day's work, and he brought two large pieces of coal up the slope and while throwing them off the car at top of slope over-balanced himself and fell down a distance of 480 feet.

Anthony McGonigle, laborer, aged forty-nine years, married, no children, and Charles Lawrence, laborer, aged twenty-five years, single, were both killed on the 21st of February by the rope breaking on No. 6 dumping slope, Honey Brook No. 4.

Fred. Fultz, miner, aged twenty-three years, single, and Charles Link, miner, aged thirty-one years, married, leaving widow and one child, were both suffocated with carbureted hydrogen gas (fire-damp) on the 18th of March in Packer No. 4 colliery, belonging to the Lehigh Valley Coal Company. This colliery had been idle for some time, owing to the depressed condition of the coal trade and during this idleness a squeeze had taken place in the Mammoth vein, fracturing all the intervening

measures up to the Holmes vein which, as a matter of course, liberated the gas, filling the workings of the upper or Holmes vein where Fultz and Link worked. In connection with the Holmes vein workings, a traveling way or outlet is constructed to the surface, and Fultz and Link had been in the habit of traveling this opening to and from their work. They had been notified by some of their fellow-workmen on the night of the 17th that the colliery would start the following morning. They went to work in their usual way, not knowing of the squeeze which had taken place in the Mammoth vein, and when about 150 yards from the surface met the gas and were both suffocated.

I went to the colliery as soon as I learned of the accident. Fultz's body was taken out before my arrival and it seemed, for some time, to be a difficult matter to locate the whereabouts of Link's.

I entered the mine in company with four of the officials and five of the workmen, carefully examining every foot of ground traveled so as to prevent any further loss of life. We first found a bottle of coffee which one of the two had used no doubt when feeling the effects of the gas. Link's body was found 40 feet farther down the pitch. I examined the body and found no marks of burning, proving that death was caused by suffocation.

Mr. James Heaton, the inside foreman was busying himself organizing the colliery, when he was informed that some one saw fire issuing from the Holmes vein outlet. He, in company with Mr. Patten, the outside foreman, immediately went to this opening not thinking that the gas was within 40 feet of the surface. Mr. Heaton went far enough down so as to light his lamp, and while striking a match ignited the gas and was severely burned.

While it is a common practice at some collieries for men to enter some districts because it is an easier way of getting to work, the mine foreman or his assistant, or some one deputized by him, should see that no one enters the colliery without his knowledge, more especially when a colliery has been idle for any length of time, and indeed it is not too much to say that any mine foreman who would wilfully neglect to have his workmen report to him in the morning before commencing to work is guilty of laxative discipline and will be held accountable should any accident happen in the future arising from such neglect, no matter whether the workmen contributes towards his own injury or possible loss of life or not.

John R. Davis, fire-boss, age 50 years, wife and six children, and William Morgan, age 37 years, wife and six children, were both suffocated by carbonic acid gas, on 6th of May, in Gilberton colliery, West Mammoth gangway; about the time the men were getting to work a sudden concussion took place along the gangway which was caused by one of the breasts running through to the gangway above. Fortunately no lives were lost, with the exception of a mule having been driven against

the high side of gangway breaking his neck. The mine foreman, John T. Davis, at once looked after the safety of his men and found that those who were still in that section of the colliery were unhurt. He then determined to find out the cause of the concussion, and made arrangements so that Davis, the fire-boss, and Williams should go up the inside manway of No. 14 breast and he would go up to the outside, with instructions that either party reaching the face of breast first, should stay there until the other arrived; instead of doing as agreed upon, Davis and Williams crossed to No. 16 breast where they were found lifeless, having been suffocated by the gas liberated from the abandoned gangway above and carried into the return airway with the ventilating current. Had they carried out the instructions of the foreman, John T. Davis, they would not have lost their lives.

John O'Boyle, miner, 45 years of age, wife and five children, and Charles Mullhem, miner, 50 years of age, wife and five children, were both killed on the 2d of August while being hoisted up Rappahannock shaft.

I visited the colliery shortly after the accident and learned that O'Boyle and Mullhem worked on the night shift. After finishing their work, they came to the bottom of the shaft to be hoisted to the surface. The engineer, John Miller, got the usual signal to hoist men, but instead of hoisting the cage the men were on, he hoisted the cage that was on top, breaking some of the head gearing. Seeing his mistake he reversed the engine very suddenly and jerked the other cage so violently from the bottom that both men were thrown off and killed. It was proven at the inquest that Miller, the engineer, was asleep on a lounge when he received the signal to hoist men and was in a dazed condition, which was the cause of his making such a serious mistake. It was also proved that during the week from Monday to Friday night he had only given himself (by Miller's own evidence) from three to four hours sleep daily. The reason he gave was, "I was picking huckleberries." Miller was arrested, tried for involuntary manslaughter and was acquitted, the jury finding him not guilty.

John Hydock, miner, age 26 years, single, Pole, was killed on the 4th of August, in Buck Mountain colliery, in breast No. 27, through the neglect of Raffellis Genette. Hydock was putting coal on sheet iron and Genette fired a shot in a heading which he was driving to connect with Hydock's breast, but he did not warn the neighboring men to get out of the way of his shot. The result was that the shot blew through the heading, killing Hydock instantly.

I had four accidents of this character but only one proved fatal.

EXAMINATION OF APPLICANTS FOR MINE FOREMAN'S CERTIFCATES.

The annual examination of applicants for mine foreman's certificates in the Fifth district, was held in Pottsville on the 8th and 9th of July.

The examiners were William Stein, mine inspector William H. Lewis, superintendent, and Frank O. Boyle, miner.

The following five were successful:

Thomas Reed, William Penn; William McGuire; Shenandoah; Thomas D. Davis, Gilberton; William D. Evans, Girardville.

Thomas R. Edwards, Lost Creek, inside foreman at Packer No. 2, Mr. Edwards also holds a certificate of service.

General Condition of Collieries.

The general condition of the collieries in my district has been improved during the year so as to increase the safety and health of the employes, and the higher mine officials are rigid in their examinations when visiting the collieries, in order to prevent accidents from explosions of gas, mine fires, or otherwise. In opening new collieries or new lifts of a colliery, the officials give much thought to the general construction of the main openings, such as transportation roads, air-ways, tunnels through the rock-measures from one vein to another, and outlets to each vein. The methods by which the several veins are mined are much improved, compared with those of a few years ago, and while some are expressing themselves even now, that a different method ought to be and can be introduced, by which our veins can be mined with greater safety, they have as yet failed to suggest any improvement to our present system of mining, notwithstanding the inducements offered to any one who can inaugurate a better system.

Additional openings are in course of construction at several of our collieries called tender-slopes, to be used for lowering and hoisting men, which is a great measure of safety for the workmen; and additional fans have been erected and are in course of erection for the purpose of increasing volume of air circulating through the collieries so as to give practically as pure an atmosphere as possible to the workmen. I feel proud to be in such a position that I can report the willingness of the operators to do everything they possibly can for the safety of those working for them, and I feel confident that if our men would live up to the law, the death rate would have been at the least calculation sixty-six per cent. below what it has been every year during my administration.

TABLE I *Showing location of collieries in the Fifth Anthracite district.*

NAME OF COLLIERY	Name of operator	Location—Schuylkill county.	Name of superintendent	Postoffice address.
Boston Run	Philadelphia and Reading Coal and Iron Company	St. Nicholas	John Veith	Pottsville, Schuylkill county
Bear Run	" " "	" " "	" " "	" " "
Ellangowan	" " "	Maple Dale	" " "	" " "
Elmwood	" " "	Mahanoy City	" " "	" " "
Girard	" " "	Girardville	" " "	" " "
Girard Mammoth	" " "	Raven Run	" " "	" " "
Gilberton	" " "	Gilberton	" " "	" " "
Hammond	" " "	Girardville	" " "	" " "
Indian Ridge	" " "	Shenandoah	" " "	" " "
Knickerbocker	" " "	Yatesville	" " "	" " "
Kohinoor	" " "	Shenandoah	" " "	" " "
Mahanoy City	" " "	Mahanoy City	" " "	" " "
North Mahanoy	" " "	" "	" " "	" " "
St. Nicholas	" " "	St. Nicholas	" " "	" " "
Schuylkill	" " "	Mahanoy City	" " "	" " "
Suffolk	" " "	St. Nicholas	" " "	" " "
Shenandoah City	" " "	Shenandoah	" " "	" " "
Turkey Run	" " "	" "	" " "	" " "
Tunnel Ridge	" " "	Mahanoy City	" " "	" " "
West Shenandoah	" " "	Shenandoah	" " "	" " "
West Bear Ridge	" " "	Mahanoy Plane	" " "	" " "
Maple Hill	" " "	St. Nicholas	" " "	" " "
Mahanoy Jig House	" " "	Mahanoy City	" " "	" " "
Packer No. 2	Lehigh Valley Coal Company	Lost Creek	Col. D. P. Brown	Lost Creek, Schuylkill county
Packer No. 3	" " "	Brownsville	" " "	" " "
Packer No. 4	" " "	Lost Creek	" " "	" " "
Packer No. 5	" " "	Rappahannock	" " "	" " "
Honey Brook No. 4	Lehigh and Wilkes-Barre Coal Company	Audenreid	J. I. Hollenback	Audenreid, Columbia county
Honey Brook No. 5	" " "	" "	" " "	" " "
Park No. 2	Lentz, Lilly & Co.	Park Place	Edward Reese	Centralia, Columbia county
Springdale	" " "	" "	" " "	" " "
William Penn	William Penn Coal Company	Shaft	William H. Lewis	Shaft, Schuylkill county
Draper	Draper Coal Company	Gilberton	H. L. Williams	Pottsville, Schuylkill county
Silverbrook	Silverbrook Coal Company	Silverbrook	William L. Harris	Silverbrook, Schuylkill county
Buck Mountain	Mill Creek Coal Company	Mahanoy City	Thomas D. Jones	New Boston, Schuylkill county
Kehley's Run	Thomas Coal Company	Shenandoah	Thomas Baird	Shenandoah, Schuylkill county
Glendon	J. C. Haydon & Co.	Mahanoy City	William P. Daniels	Mahanoy City, Schuylkill co.
Primrose	Nevils & Co.	" "	James Wynn	" " "
Lawrence	Lawrence & Brown	Mahanoy Plane	Simon Moore	Frackville, Schuylkill county
Cambridge	Cambridge Coal Company	Shenandoah	William James	Shenandoah, Schuylkill county
Furnace	Zerbe & Co.	Gilberton	Oliver Zerbe	" " "
Oneida	Coxe Brothers	Nelson City	E. B. Coxe	Drifton, Luzerne county

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fifth Anthracite District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers	Number horses and mules.	Pounds of dynamite.
West Bear Ridge	Mahanoy, Plane	87,999	83,809	183.05	598	. . .	2	950	48	49	12,800
Maple Hill	St. Nicholas	. . . . .	. . . . .	. . . . .	54	. . .	. . .	250	10	. . .	5,000
Packer No. 2	Lost Creek	99,562.17	89,106.17	152.45	310	. . .	3	2,102	22	23	2,055
Packer No. 3	Brownsville	91,290.08	78,122.08	99.55	404	. . .	1	1,633	24	37	467
Packer No. 4	Lost Creek	124,063.13	105,642.13	148.15	336	3	4	2,970	30	35	2,041
Packer No. 5	Rapphannock	163,872.03	145,199.03	175.10	532	3	7	3,915	28	37	8,116
Park No. 2	Park Place	261,100	238,979.17	190.3	564	3	1	6,360	46	84	. . . .
Springdale	"	Idle.	. . . . .	. . . .	110	2	3	158	31	17	. . . .
Buck Mountain	Buck Mountain	155,553.11	144,603.11	215.1	372	1	3	3,547	24	30	. . . .
Draper	Gilberton	190,855.09	173,383.09	241.1	460	. . .	2	2,700	40	37	5,250
Glendon	Mahanoy City	106,317.16	87,849.06	223.8	363	1	. . .	3,465	24	48	3,300
Kehley's Run	Shenandoah	125,319.06	123,619.14	259.50	308	3	5	3,850	24	29	6,750
Lawrence	Mahanoy Plane	112,024.18	75,524.18	186.25	427	2	1	580	40	35	9,350
William Penn	Shaft	300,000	279,000	243	623	2	1	6,000	46	61	6,000
Primrose	Mahanoy City	120,802	104,602	221	271	1	. . .	4,257	22	22	1,200
Cambridge	Shenandoah	2,846.12	2,846.12	180	25	. . .	. . .	150	2	7	. . . .
Furnace	Gilberton	19,575.12	19,575.12	230	55	. . .	. . .	400	2	4	. . . .
Silver Brook	Silver Brook	180,000	162,943.09	246	481	. . .	1	3,055	29	39	. . . .
Honeybrook No. 4	Audenreid	187,688.8	164,665.7	254.1	413	5	6	3,609	33	35	5,613
Honeybrook No. 5	"	255,793.8	230,285.12	265.4	703	. . .	4	3,135	59	40	6,564
Boston Run	St. Nicholas	169,863	161,775	224.10	511	2	. . .	2,575	24	42	5,000
Bear Run	"	126,764	120,709	161.05	697	1	3	2,900	24	56	2,575
Ellangowan	Maple Dale	416,285	396,462	244.75	1,040	4	5	8,750	30	92	3,050
Elmwood	Mahanoy City	120,090	114,372	240.85	372	1	1	3,645	16	33	3,525
Girard	Girardville	111,520	106,210	234.60	426	. . .	1	840	39	37	7,300
Girard Mammoth	Raven Run	111,948	106,618	235.35	314	1	1	2,750	22	41	2,200
Gilberton	Gilberton	255,630	243,458	248.05	670	4	6	6,050	42	49	8,100
Hammond	Girardville	179,588	171,034	243.90	636	4	4	5,775	36	57	6,450
Indian Ridge	Shenandoah	254,007	241,912	243.55	860	2	6	5,300	24	73	3,100
Knickerbocker	Yatesville	204,805	195,053	206.60	597	3	6	4,850	25	47	5,700

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal	Total shipment in tons of coal	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers	Number horses and mules.	Pounds of dynamite.
Kohinoor	Shenandoah	189,025	180,024	235.15	556	. . .	1	4,295	33	54	2,450
Mahanoy City	Mahanoy City	132,595	126,281	245.60	466	3	2	3,625	30	47	1,600
North Mahanoy	"	183,916	175,159	245.40	606	1	4	5,150	18	52	1,660
St. Nicholas	St. Nicholas	135,139	128,704	252.70	405	1	. . .	3,011	38	38	3,200
Schuylkill	Mahanoy City	107,554	102,433	219.05	396	2	1	3,335	20	31	750
Suffolk	St. Nicholas	259,387	247,036	243.20	810	2	5	7,825	18	54	3,100
Shenandoah City	Shenandoah	216,760	206,439	209.80	762	. . .	3	5,950	20	77	8,600
Turkey Run	"	220,996	210,949	245.45	546	1	1	5,775	12	54	1,050
Tunnel Ridge	Mahanoy City	90,685	86,367	146	498	1	1	2,850	24	36	1,550
West Shenandoah	Shenandoah	164,336	156,511	248.45	461	1	2	3,550	16	45	1,550
Oneida	Nelson City	11,516	494	. . . .	217	6	. . .	1,037	15	32	. . . .
South Laurel Ridge	Marisville	1,975.13	1,975.13	40	50	. . .	. . .	68	10	16	. . . .
Sydney Coal Company	"	62,807.19	62,807.19	. . . .	. . .	. . .	. . .	. . . .	. . .	. . .	. . . .

TABLE NO. III—*Showing the number of each class of employes at each colliery in the Fifth Anthracite District, during the year 1890.*

NAMES OF COLLIERIES.	NUMBER AND DESCRIPTION OF SERVICE OF PERSONS EMPLOYED INSIDE.							NUMBER AND DESCRIPTION OF SERVICE OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendent's, bookkeepers and clerks.	Total outside.	
Boston Run	5	147	52	74	20	7	305	1	6	14	106	78	1	206	511
Bear Run	4	151	134	133	32	6	460	1	8	12	132	83	1	237	697
Ellangowan	10	342	100	94	43	13	602	2	18	18	279	118	3	438	1,040
Elmwood	4	98	40	71	17	4	234	1	4	10	79	43	1	138	372
Girard	4	80	30	97	12	5	224	1	6	22	96	71	2	198	426
Girard Mammoth	2	67	6	52	12	4	143	1	6	13	92	58	1	171	314
Gilberton	5	184	51	102	15	6	363	1	12	18	157	118	1	307	670
Hammond	5	176	69	105	24	4	383	1	8	18	133	91	2	253	636
Indian Ridge	8	212	150	72	62	9	513	2	28	26	186	103	2	347	860
Knickerbocker	4	135	53	71	17	4	284	2	11	16	210	72	2	313	597
Kohinoor	6	146	87	50	22	5	316	1	13	20	126	78	2	240	556
Mahanoy City	3	109	50	81	21	9	273	1	5	13	123	49	2	193	466
North Mahanoy	4	191	83	61	35	14	388	1	6	6	135	68	2	218	606
St. Nicholas	3	100	57	50	12	4	226	. . . .	20	12	74	72	1	179	405
Schuylkill	3	110	51	53	18	9	244	1	6	12	94	38	1	152	396
Suffolk	4	260	140	96	19	20	539	1	16	15	124	112	3	271	810
Shenandoah City	5	184	97	99	42	19	446	1	12	17	179	104	3	316	762
Turkey Run	4	138	111	57	20	6	336	1	6	7	112	82	2	210	546
Tunnel Ridge	4	153	50	72	19	9	307	1	4	10	114	61	1	191	498
West Shenandoah	5	128	32	51	16	6	238	1	18	13	127	62	2	223	461
West Bear Ridge	3	131	51	108	13	14	320	1	17	29	120	109	2	278	598
Maple Hill	. . . .	16	13	. . . .	. . . .	. . . .	29	1	6	4	. . . .	43	. . . .	54	83
Mahanoy jig house	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	. . . .	1	3	5	41	30	3	83	83
Packer No. 2	1	85	57	25	11	9	188	1	5	10	57	47	2	122	310
Packer No. 3	1	117	51	63	19	11	262	1	6	10	67	56	2	142	404
Packer No. 4	1	104	20	70	17	4	216	1	7	10	44	56	2	120	336
Packer No. 5	2	150	47	113	16	8	336	1	13	10	85	85	2	196	532
Honey Brook No. 4	1	78	61	64	24	7	235	2	8	15	78	75	1	179	414
Honey Brook No. 5	1	63	18	127	17	3	229	9	20	25	118	296	6	474	703
Park No. 2	2	160	70	65	24	11	332	1	15	22	114	74	6	232	564
Springdale	1	31	. . . .	14	3	1	49	1	12	7	. . . .	41	. . . .	61	110

TABLE III– *Continued.*

NAME OF COLLIERIES.	NUMBER AND DESCRIPTION OF SERVICE OF PERSONS EMPLOYED INSIDE.							NUMBER AND DESCRIPTION OF SERVICE OF PERSONS EMPLOYED OUTSIDE.							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foreman.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Draper,	1	103	24	107	17	5	257	1	7	23	98	71	3	147	363
William Penn,	3	120	110	50	30	30	343	1	17	17	190	50	5	280	623
Buck Mountain,	1	146	37	21	15	4	224	1	6	12	82	44	3	148	372
Silver Brook,	1	74	60	38	25	7	205	2	10	22	122	117	3	276	481
Kehley's Run,	1	103	14	55	13	4	190	1	6	10	50	50	1	118	308
Glendon,	1	116	15	61	15	8	216	1	6	7	85	45	3	147	363
Primrose,	2	71	21	35	9	5	143	1	5	8	54	57	3	128	271
Lawrence,	1	91	60	72	14	8	246	1	10	35	70	64	1	181	427
Cambridge,	1	6	6	2	1	....	16	1	....	....	3	5	....	9	25
Furnace,	1	20	7	1	2	....	31	1	....	1	12	10	....	24	55
Onedia,	2	37	44	51	4	2	140	1	25	9	....	45	1	77	217
	120	4,933	2,229	2,680	767	304	11,054	54	417	583	4,168	2,929	86	8,235	19,289

TABLE IV—*List of Fatal Accidents occurring in the mines of the Fifth Anthracite District for the year ending December 31, 1890.*

Date of accident.	NAMES OF PERSONS INJURED.	Age.	Married or single.	No. of orphans.	Name of colliery.	Location Schuylkill county.	Date of investigation.	Nature and cause of accident in brief.
Jan. 3,	Ebenezer Hughes,	38	M	5	Gilberton,	Gilberton,	Jan. 7,	Miner; fatally injured by a fall of coal; died on the 5th.
16,	John Bernesky,	34	M		Oneida No. 2 slope,	Oneida,		Miner; he was taking coal home out of the slope and in throwing it off at top of slope over-balanced himself and fell down a distance of 480 feet; killed instantly.
24,	David Edwards,	22	S		North Mahanoy,	Mahanoy City,	Jan. 25,	Bottom man; killed by being crushed between loaded and empty cars.
31,	B. F. Heist,	26	S		Suffolk,	St. Nicholas,	Feb. 3,	Miner; fatally injured by a fall of coal; died Feb. 10th in Miners' hospital.
Feb. 1,	James Salmon,	50	M	6	Mahanoy City,	Mahanoy City,	3,	Miner; killed by a fall of coal.
10,	Patrick Sheeby,	46	M	6	Indian Ridge,	Shenandoah,	11,	Miner; killed by a fall of coal.
13,	Thomas H. James,	45	M	1	West Shenandoah,	Shenandoah,	14,	Miner; fatally burned by an explosion of gas; died on the 20th.
21,	Anthony McGonigle,	49	M		Honey Brook No. 4,	Audenreid,		Laborer; killed by the breaking of a rope while being hoisted up No. 6 pumping slope.
21,	Charles Laurense,	25	S		Honey Brook No. 4,	Audenreid,		Laborer; killed by the breaking of a rope while being hoisted up No. 6 pumping slope.
March 1,	Fred. Kerchner,	19	S		Elmwood,	Mahanoy City,	March 3,	Driver; killed; mule kicked him, breaking his skull.
8,	George W. Thomas,	21	S		Kehley's Run,	Shenandoah,	10,	Driver; killed by falling under cars.
18,	Fred. Fultz,	23	S		Packer No. 4,	Lost Creek,	18,	Miner; suffocated by an outburst of gas (hydrogen).
18,	Charles Link,	31	M	1	Packer No. 4,	Lost Creek,	18,	Miner; suffocated by an outburst of gas (hydrogen).
18,	Andrew Rice,	28	S		Boston Run,	St. Nicholas,	19,	Miner; killed by falling down breast manway.
18,	Jacob Swerch,	24	S		Knickerbocker,	Yatesville,	20,	Outside laborer; killed by being squeezed between loaded cars at bottom of breaker plane.
19,	William Dum,	45	M	3	Schuylkill,	Mahanoy City,		Pump engineer; fatally injured; died on the 28th. He was descending the shaft to his work, the cage stuck in the guides from the collection of ice until the rope ran out four feet when the cage dropped giving him a severe shock, which the physician stated was the cause of his death.
April 7,	Nicholas Marks,	40	M	4	Turkey Run,	Shenandoah,	March 29,	Miner; fatally injured by a fall of coal; died on the 26th. This injury was not considered serious at first as Marks was able to walk around until a few days before he died.
May 1,	John Skutshus,	27	S		Suffolk,	St. Nicholas,	May 3,	Loader; fatally injured; died on the 6th. The driver ran a trip of cars down the plane on him while he was cleaning the track at the dinner hour.
6,	John R. Davis,	50	M	6	Gilberton,	Gilberton,	6,	Fire boss; suffocated by gas.
6,	William Morgan,	37	M	6	Gilberton,	Gilberton,	6,	Miner; suffocated by gas.
12,	Frank Shultz,	49	M	9	Packer No. 4,	Lost Creek,	15,	Repairman; fatally injured by being run over by cars on slope track; died on May 22d.

TABLE IV- *Continued.*

Date of accident.	NAME OF PERSON KILLED.	Age.	Married or single	No. of orphans.	Name of colliery.	Location Schuylkill county.	Date of investigation.	Nature and cause of accident in brief.
May 15.	Adam Volcofski,	26	S		Ellengowan,	Maple Dale,	May 16.	Laborer; fatally injured by an explosion of gas; died same day
15.	Michael Wacaiaha,	26	S		Springdale,	Park Place,	16.	Laborer; killed by fall of rock in tunnel.
15.	Steve Poupanchu,	28	S		Springdale,	Park Place,	16.	Laborer; killed by fall of rock in tunnel.
20.	Michael Grant,	26	M	1	Schuylkill,	Mahanoy City,	21.	Laborer; killed by fall of rock in gangway face.
21.	Anthony McAuski,	28	S		Gilberton,	Gilberton,	22.	Miner; fatally injured by a blast; died same day.
31.	Samson Couch,	27	M	2	William Run,	Shaft,	June 3.	Miner; fatally injured by an explosion of gas; died June 6th.
31.	Frank Krivlansky,	40	M	5	Oneida No. 1 slope,	Oneida,		Miner; was lifting a car on track at top of slope, his feet slipped and he fell a distance of 440 feet; killed instantly.
June 2.	Stephen Foose,	20	S		Oneida No. 2 slope,	Oneida,		Pumpman; fatally scalded by steam from a broken steam pipe; died same day.
2.	Michael Leonard,	54	M	4	Ellangowan,	Mapledale,	June 5.	Miner; fatally injured by a rush of loose coal in breast; died on the 4th.
2.	David Williams,	26	M	2	Girard Mammoth,	Raven Run,	5.	Miner; killed by side slip of coal at face of gangway.
6.	John H. Boggs,	21	S		St. Nicholas,	St. Nicholas,	6.	Loader; killed; crushed between top of car and side of gangway.
12.	Frank Gallot,	21	S		Packer No. 5 slope,	Rappahannock,	13.	Driver; killed; crushed between car and gangway timber
26.	Joseph McKeshuck,	27	S		Packer No. 2 slope,	Park Place,	27.	Laborer; while assisting in lifting a collar leg on end of car it rolled on him breaking his neck.
30.	Ben. Sheppard,	26	S		Glendon,	Mahanoy City,	July 2.	Starter; killed by an explosion of dynamite.
July 7.	Linn McNamara,	20	S		Boston Run,	St. Nicholas,	10.	Car loader; killed while coupling cars.
7.	Joseph Kineski,	33	M	2	Knickerbocker,	Yatesville,	10.	Miner; killed by a fall of coal.
7.	Joseph Lilly,	18	S		Indian Ridge,	Shenandoah,	11.	Driver; killed; cars ran over him.
14.	Louis Hildebrand,	30	M	2	Kehley's Run,	Shenandoah,	14.	Miner; fatally injured, and died shortly after being taken home, by being squeezed between car and "rib."
15.	Steiny Covelaski,	41	M	2	Packer No. 3 slope,	Park Place,	17.	Miner; killed by a fall of coal.
22.	Mike Mosco,	21	S		Ellengowan,	Mapledale,	23.	Outside Laborer; hand cut by being caught between a dumper and a piece of rock; died on the 29th from blood poisoning.
Aug. 2.	John O'Boyle,	45	M	5	Packer No. 5,	Rappahanock,	Aug. 2.	Miner; killed while being hoisted up the shaft.
2.	Charles Mullhern,	50	M	5	Packer No. 5,	Rappahanock,	2.	Miner; killed while being hoisted up the shaft.
4.	John Hydock,	26	S		Buck Mountain,	Mahanoy City,	5.	Miner; killed by the carelessness of a neighboring miner firing a shot without giving the necessary warning.
5.	Joseph Yunchitis,	25	S		Dear Run,	St. Nicholas,	6.	Miner; killed by a fall of coal while robbing pillars.
11.	Anthony Junas,	25	S		Kehley's Run,	Shenandoah,	11.	Laborer; fatally injured by a fall of clod; died same day.
Sept. 1.	Andrew Thomas,	26	M		Oneida No. 2 slope,	Oneida,		Laborer; the gangway miner was taking some loose top down when a fall took place; Thomas was found dead as he stood on the high side of gangway, the doctor stated that he could find no injuries on his body and gave as his opinion that Thomas died from fright.
6.	Charles Steiner,	23	S		Tunnel Ridge,	Mahanoy City,	Sept. 8.	Miner; killed by a fall of coal at face of breast.
16.	Ludwig Kopitis,	25	S		Ellengowan,	Mapledale,	20.	Miner; killed by a fall of coal.

15 Mines.

Oct.	2,	John Driscoll,	24	S	. .	Primrose,	Mahanoy City,	Oct.	3,	Loader; killed by a fall of clod.
	15,	Mike Kita,	26	M	. .	Honeybrook No. 4,	Audenreid,		16,	Laborer; killed by a fall of clod.
	15,	Andrew Svarc,	28	S	. .	Honeybrook No. 4,	Audenreid,		16,	Laborer; killed by a fall of clod.
	15,	James Phillips,	43	M	2	Honeybrook No. 4,	Audenreid,		16,	Miner; killed by a fall of coal.
	20,	Patrick McCormick,	52	M	11	Hammond,	Girardville,		21,	Miner; killed by a fall of coal and slate.
	23,	Patrick Monaghan,	19	S	. .	Park No. 2 slope,	Park Place,		27,	Driver; as he was shifting a car another car from the face of slant breast ran down on and killed him.
	25,	William Barker,	19	S	. .	Mahanoy City,	Mahanoy City,			Loader; leg broken by being caught between loaded cars; died on the 4th of December.
	31,	Harry Lewis,	17	S	. .	William Penn,	Shaft,	Nov.	3,	Driver; he attempted to cross the bottom of slope while the cage was being hoisted, a pulley became detached and rolled down striking and crushing his skull; died twelve hours after the accident occured.
Nov.	6,	John Lavyon,	42	M	6	Hammond,	Girardville,		6,	Gangway miner; killed by a fall of top coal at face.
	13,	Peter Grady,	20	S	. .	Knickerbocker,	Yatesville,		17,	Outside laborer; pulling bar off a car, broke causing it to run down the plane, killing Grady who was in the act of taking the empty car off at bottom of plane.
	14,	Edward Gravey,	17	S	. .	Lawrence,	Mahanoy Plane,		17,	Driver; killed on the "tender slope" by a piece of rock rolling down from where workmen were repairing the slope; Gravey instead of keeping in a heading where others were waiting for the car which was coming down, got on the slope against the warnings of his companions who were with him.
	27,	Jacob Bechtel,	28	M	1	Mahanoy City,	Mahanoy City,		28,	Miner; killed by a fall of coal in face of gangway.
Dec.	5,	Thomas Green,	56	M	4	Hammond,	Girardville,	Jan.	6,	Miner; leg broken; died on the 20th of January, 1891.
	17,	John Vritzij,	16	S	. .	Oneida No. 2 slope,	Oneida,		17,	Door boy; fell down slope 350 feet; killed instantly.
	26,	Morris Labrecht,	26	M	2	Lawrence,	Mahanoy Plane,		27,	Pumpman; killed by rope breaking while he was being hoisted up the tender slope.
	27,	Patrick Moy,	16	S	. .	Oneida No. 1 slope,	Oneida,		29,	Patcher and door tender; he was taking a car up slant gangway when from some cause the car at face of gangway ran down and killed him; it is reasonable to suppose that the car was not properly blocked.
	29,	Pat. Gannon,	46	M	4	Hammond,	Girardville,	Jan. 6, '91,		Miner; fatally injured by fall of coal; died January 1, 1891.

TABLE V.—*List of Non-Fatal Accidents occurring in the Mines of the Fifth Anthracite District, for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON INJURED	Age.	Married.	No. of children.	Name of colliery.	Location—Schuylkill county.	Nature and cause of accident in brief.
Jan. 3.	Anthony Lodoski,				Gilberton,	Gilberton,	Miner; bruised on shoulders by a fall of coal.
10.	Patrick Fleming,				Schuylkill,	Mahanoy City,	Miner; foot mashed by a fall of coal.
15.	William Bowden,				Indian Ridge,	Shenandoah,	Driver; fracture of thigh bone and severe contusion of arm; mule kicked him.
17.	James McLaughlin,				Honeybrook No. 4,	Audenreid,	Miner; leg broken by a fall of coal.
28.	Fred. Stull,				Honeybrook No. 5,	"	Miner; leg broken by a fall of coal.
31.	James Laddon,				Elmwood,	Mahanoy City,	Miner; arm and leg broken by a fall of coal.
Feb. 13.	John E. Jones,				West Shenandoah,	Shenandoah,	Miner; face and hands burned slightly by an explosion of gas.
26.	Peter Shillo,				North Mahanoy,	Mahanoy City,	Laborer; eye knocked out while breaking a piece of slate.
Mar. 3.	Morgan Evans,				Gilberton,	Gilberton,	Miner; hip broken by a fall of coal.
13.	Elmer Britton,				Hammond,	Girardville,	Driver; arm broken by falling between cars.
18.	James Heaton,				Packer No. 4,	Lost Creek,	Mine foreman; burned on hands and face by an explosion of gas at the outlet of "Holmes vein."
24.	Mike Mercham,				Indian Ridge,	Shenandoah,	Outside laborer; head and thigh severely injured; rope on plane broke and the coal from the descending car struck him.
25.	Thomas Delany,				Draper,	Gilberton,	Miner; hand cut off by a fall of coal.
31.	Sol. Jones,				Hammond,	Girardville,	Loader boss; collar bone broken; caught by cars; coupling while the cars were in motion.
Apr. 1.	Jacob Volentars,				Kehley's Run,	Shenandoah,	Miner; burned with powder while charging a hole; he burst the cartridge, igniting the powder with his lamp.
2.	George Grafton,				Gilberton,	Gilberton,	Miner; slightly burned on hands and face by an explosion of gas; he went up chute with a naked lamp.
2.	Wesley Taylor,				"	"	Miner; slightly burned on hands and face same time as Grafton.
5	Harry Taylor,				Hammond,	Girardville,	Driver; leg broken by a plank falling off car on him.
5.	Andrew Pitts,				Suffolk,	St. Nicholas,	Miner; leg broken by a fall of coal.
7.	Simon Suski,				"	"	Loader; hip bone injured by a fall of coal while loading a car.
8.	Mich. Mocknosh,				Buck Mountain,	Mahanoy City,	Laborer; leg broken by coal rolling down the chute on him.
10.	Condy O'Donnell,				Silverbrook,	Silverbrook,	Miner; arm broken and otherwise slightly injured by a fall of coal.
12.	John Harris,				Hammond,	Girardville,	Miner; leg broken by a fall of coal.
18.	Andrew Bolich,				Knickerbocker,	Yatesville,	Bottom man; head severely cut; coal rolled off car on him while being hoisted up slope.
21.	Henry Mosel,				Suffolk,	St. Nicholas,	Miner; leg broken by a fall of coal.
23.	Thomas Powell,				Kehley's Run,	Shenandoah,	Miner; leg broken by a fall of coal.
29.	Pat. McCauley,				Honeybrook No. 4,	Audenreid,	Laborer; loss of one eye by a piece of coal which flew from his pick.
May 1.	Henry Becker,				Shenandoah City,	Shenandoah,	Miner; arm fractured and hips bruised; struck with coal flying from a shot that Bowers, a neighboring miner, fired without giving warning as prescribed by law.
1.	Steve Lucas,				Honeybrook No. 4,	Audenreid,	Laborer; leg broken; car run over him.

5,	James Crooks,	Kohinoor,	Shenandoah,	Laborer; leg broken; coal slipped from rib on him.
7,	William McNally,	Girard,	Girardville,	Laborer; shoulder bruised by fall of coal.
7,	John Farr,	Mahanoy City,	Mahanoy City,	Miner; leg broken by coal rolling on him.
12,	Michael Donnolly,	West Bear Ridge,	Mahanoy Plane,	Laborer; leg broken by a fall of coal.
15,	William Coupstas,	Packer No. 2,	Lost Creek,	Miner; burned on face and hands by an explosion of gas; he went to his place of work with a naked lamp, although warned by the fire-boss not to enter.
15,	Peter Folts,	Springdale,	Park Place,	Laborer; back and legs severely bruised by a fall of rock in face of tunnel.
22,	Frank Roberts,	Knickerbocker,	Yatesville,	Fire-boss; small bone of ankle broken by being caught between bumpers of cars.
24,	Patrick Slavin,	Indian Ridge,	Shenandoah,	Laborer; leg broken by falling from a scaffold.
26,	Peter Connolly,	Ellangowan,	Mapledale,	Driver; arm broken; mule kicked him.
31,	Bartley Flannery,	William Penn,	Shaft,	Miner; slightly burned by an explosion of gas; he returned to work with his naked lamp, after firing a shot.
June 3,	Lewis Savage,	Buck Mountain,	Mahanoy City,	Miner; two legs broken by a fall of coal.
6,	Michael Oseller,	Honeybrook No. 5,	Audenreid,	Laborer; leg broken by a fall of coal.
6,	Metro Zells,	No. 8 slope,	"	Miner; leg broken by a fall of coal.
7,	Michael Carduff,	Packer No. 5,	Rappahannock,	Door-boy; arm amputated above elbow by being run over by mine cars.
9,	Martin Corrigan,	Ellangowan,	Mapledale,	Miner; back bruised and severely cut by a fall of top coal.
11,	Martin O'Boyle,	Shenandoah City,	Shenandoah,	Miner; slightly burned by an explosion of gas.
13,	Anthony S. Leehan,	Packer No. 5,	Rappahannock,	Starter; leg broken; coal rushed at battery on him and he was squeezed between coal and prop.
17,	Charles Soluski,	"	"	Laborer; skull fractured and leg broken by a fall of coal from upper side of gangway; he is able to work again.
22,	Frederick Stull,	Green Mountain slope,	Audenreid,	Miner; leg broken by a fall of coal.
28,	Samuel Richards,	North Mahanoy,	Mahanoy City,	Miner; foot broken by a fall of rock.
28,	Robert Jones,	Gilberton,	Gilberton,	Miner; burned slightly by an explosion of gas, his "butty" came behind him with a naked lamp, while he, Jones, was examining for gas, which was the cause of the explosion.
July 8,	Charles Docherty,	Park No. 2 slope,	Park Place,	Miner; arm broken and head cut by a fall of coal.
19,	John Savaccas,	Honeybrook No. 5,	Audenreid,	Miner; seriously injured by a fall of coal, is now working again.
22,	Joseph Rice,	Gilberton,	Gilberton,	Miner; burned about face and hands by an explosion of gas; went up to face of breast with naked lamp.
23,	Matt Rice,	Bear Run,	St. Nicholas,	Miner; shot in face, he did not give time for shot to explode and went back to see if the squib had missed fire.
23,	Henry Davis,	North Mahanoy,	Mahanoy City,	Laborer; leg broken by a fall of top rock.
25,	Pat. Cosgrove,	Turkey Run,	Shenandoah,	Door-boy; arm broken; fell off a mule.
28,	John Thomas,	Bear Run,	St. Nicholas,	Loader; collar bone broken; mule kicked him.
Aug. 4,	Joseph Michalski,	Ellangowan,	Mapledale,	Slate picker; ankle broken; struck by coal going up a chute.
8,	George Berzsalski,	"	"	Miner; leg broken by a fall of coal.
8,	Anthony Stipstski,	Knickerbocker,	Yatesville,	Miner; leg broken by a fall of bony coal.
14,	John Cowanan,	Mahanoy City,	Mahanoy City,	Miner; face and hands burned by powder; he fell going up breast manway, bursting a cartridge and his lamp ignited the powder.
14,	John Lynch,	Indian Ridge,	Shenandoah,	Miner; leg broken by a fall of coal.
19,	Sam Hart,	Kehley's Run,	"	Assistant driver; skull fractured by being kicked by a mule; he is at work again.
Sept. 13,	William Brennan,	Knickerbocker,	Yatesville,	Miner; back bruised and hand cut by a fall of coal.
15,	Robert Lutz,	Packer No. 5,	Rappahannock,	Laborer; burned about face and hands by an explosion of gas. Rolland the miner sent him to work with a naked lamp, leaving the safety outside. Rolland claimed that a safety lamp had been used, but that the gauge had burst, however, his safety lamp was found hanging on a prop, and was even used to examine for gas after the explosion.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married.	Number of children.	Name of colliery.	Location—Schuylkill county.	Nature and cause of accident in brief.
Sept. 15.	Martin Rolland.				Packer No. 5.	Rappahannock.	Laborer; burned about face and hands at the same time and under the same circumstances as Lutz; he is the son of the miner who was in charge, and am glad to report that they are both at work again.
15.	John Ambrose.	24	S.		Packer No. 5	"	Miner; seriously injured about head and eyes; he charged a hole with dynamite, put the squib in position and lit it, he, however, thought the squib had missed fire and went back to place another one when the shot exploded in his face.
16.	Jos. Mitchell.	38	W.	3	"	"	Miner; seriously injured about head, face and eyes; went back to a shot too soon, thinking that it had missed fire, just exactly what Ambrose did.
17.	Rodger McGeeghan.	26	S.		Honeybrook No. 4.	Audenreid.	Miner; head and back cut; not seriously; he was dressing off after firing when a piece of "bony coal" fell on him.
24.	John Sullivan.				North Mahanoy.	Mahanoy City.	Driver; leg broken by being thrown under a car.
Oct. 17.	Anthony Flynn.				Indian Ridge.	Shenandoah.	Miner; leg amputated, traveling up hoisting slope he was crossing the track in front of empty cars, when near the top of slope the cars ran over him. A splendid traveling way is constructed for the safety of the workmen, but many do not use it.
17.	Mich. Zurko.				Buck Mountain.	Mahanoy City.	Miner; hips and sides bruised by a fall of coal.
17.	James Jackson.				Girard Mammoth.	Raven Run.	Miner; rib broken by falling on some loose coal coming down chute.
20.	John Leonard.				Tunnel Ridge.	Mahanoy City.	Starter; leg broken by being struck by a rock at "battery."
20.	Robert Buchanan.				Ellangowan.	Mapledale.	Driver; skull fractured; he fell off a car.
21.	John Turner.				Springdale.	Park Place.	Miner; burned with gas on face and hands; went up to his working face with a naked lamp.
21.	Mich. Gaughan.				"	"	Miner; burned with gas on hands and face at the same time and place with Turner.
27.	William Patterson.				West Shenandoah.	Shenandoah.	Miner; neck cut; a sulphur ball fell on him while he was cutting a leg hole.
Nov. 4.	Anthony Wilcufski.				Packer No. 2.	Lost Creek.	Miner; burned by an explosion of gas; he and his "butty" went to work with naked lamps, contrary to the orders of the fire-boss.
4.	William Yoncliski.				"	"	Miner; burned at the same time and place with Wilcufski.
7.	Pat Ryan.				Knickerbocker.	Yatesville.	Laborer; collar bone broken and head bruised; squeezed between car and "rib."
11.	John Maddon.				Indian Ridge.	Shenandoah.	Miner; chest squeezed and hand badly crushed by a fall of coal.
11.	John Rodgers.				Kehley's Run.	"	Miner; injured on breast and face by a premature blast.
11.	John Rhoads.				"	"	Miner; head cut and otherwise slightly injured by a fall of coal.
13.	David Bauchman.				Packer No. 3.	Brownsville.	"Tipman;" leg fractured by a piece of coal falling from a car on him.

	15,	Jos. Camerack,				Lawrence,	Mahanoy Plane,	Miner; slightly burned about face and hands by gas; he was searching for a place to hide a shovel and found gas; he had no safety lamp.
	25,	Alexander Heavle,				Suffolk,	St. Nicholas,	Miner; seriously injured about back and head; the neighboring miner fired a shot in a heading which blew through, striking Heavle; they gave no warning that they were going to fire.
Dec.	1,	Charles O'Gonoski,				"	"	Miner; leg broken by a fall of coal.
	16,	Onfield Gowenseaw,				Shenandoah City,	Shenandoah,	Loader; leg broken by a fall of coal.
	16,	Frank Taylor,				West Bear Ridge,	Mahanoy Plane,	Loader; squeezed about hips between car and collar; the mule started the car before Taylor was ready.
	16,	John Roland,	20	S		Bear Run,	St. Nicholas,	Slate picker; back and side bruised; he got on the roof of the breaker and, it being covered with ice, he slid down and fell on the railroad track.
	20,	Henry Hawley,				Knickerbocker,	Yatesville,	Driver; foot bruised; he was caught between switch rails, and a car ran over him.
	22,	Evan Thomas,	35	M.	5	Packer No. 4,	Lost Creek,	Miner; hip bone broken by a fall of top slate.
	22,	William Seniski,	34	M.		"	"	Miner; burned on face and hands by an explosion of gas. The fire-boss did not examine for gas before allowing Seniski to enter his working place.
	22,	Matt Seniski,				"	"	Miner; burned on face and hands at same time as his brother William
	22,	Andro Zebora,				Honeybrook No. 4,	Audenreid,	Laborer; leg broken while loading a car in gangway; coal fell on him.
	31,	Robert Bowen,				Draper,	Gilberton,	Miner; leg broken; he was clearing his manway and the coal swept him down before it.

SIXTH ANTHRACITE DISTRICT.

(COLUMBIA, DAUPHIN, NORTHUMBERLAND AND SCHUYLKILL COUNTIES).

ASHLAND, PA., *March, 1891.*

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of presenting herewith my annual report for the year ending December 31, 1890. Complete returns from all the mines in this district show that 4,428,972 tons of coal have been produced as against 4,353,868.22 for the previous year, thus showing an increase of 75,103.78 tons. The number of fatal accidents for the year 1890 was thirty-nine as against fifty-two for the previous year, which is a decrease of thirteen; almost fifty per centum of the fatal accidents were caused by falls of roofs and sides. This being the case every year it goes to show that more lives are lost from this cause than any other, for, as in former years, I am compelled to say that a large number of both fatal and non-fatal accidents would be averted if the unfortunates themselves would exercise more care. The accompanying tables show the quantity of coal mined, also the quantity shipped to market, number of persons employed in and about the mines, number of fatal and non-fatal accidents which occurred during the year, and comparisons with years 1887, 1888 and 1889.

Very respectfully yours,

WILLIAM McMURTRIE,

Inspector of Mines Sixth Anthracite District.

Table No. 1—*Comparative statement of fatal casualities from various causes which occurred during the years 1887, 1888, 1889 and 1890.*

Causes of Accidents.	1887.	1888.	1889.	1890.
Explosions of fire-damp,	1	4	1	1
Falls of coal and roof,	16	34	25	17
Mine cars and machinery,	11	17	11	10
Falling down slopes,		3	3	1
Breaking of ropes and chains,		1		
Explosions of blasting materials,	3	3	2	1
Suffocated by mine gases,	10		1	
Kicked by mules,			1	1
Miscellaneous,	11	2	8	8
Total,	52	64	52	39

Table No. 2—*Showing numbers of tons of coal mined by each company, number of deaths and number of tons of coal mined per death.*

Name of Company.	Tons mined.	Deaths.	Tons mined per death.
Phila. and Reading Coal and Iron Company,	2,087,234	22	94,874.27
Mineral Railroad and Mining Company,	370,076	3	123,358.66
Summit Branch Railroad Company,	303,438	4	75,855.50
Lykens Valley Coal Company,	274,152	2	137,076.00
Union Coal Company,	377,634	2	188,817.00
L. A. Riley & Co.,	329,100	4	82,275.00
Individual collieries,	687,338	2	343,669.00
Total,	4,428,972	39	115,357.00

Table No. 3—*Showing comparison of non-fatal accidents occurring from different causes during the years 1888, 1889 and 1890.*

	1888.	1889.	1890.
Falls of coal and roof,	55	50	59
Explosions of fire-damp,	24	25	13
Mine cars and machinery,	28	32	30
Explosions of powder,	8	6	3
Kicked by mules,	3	3	3
Miscellaneons,	23	29	13
Total,	141	145	121

TABLE No. 4—*Showing comparison of the quantity of coal shipped, the estimated quantity used and sold at collieries and the total production for the years 1887, 1888, 1889 and 1890.*

	1887.	1888.	1889.	1890.
Quantity of coal shipped,	4,359,230.16	4,459,960.00	4,051,147.41	4,123,347.00
Quantity of coal used at the collieries,	378,391.95	250,054.54	302,720.81	305,625.00
Number of tons produced,	4,737,622.11	4,710,014.54	4,353,868.22	4,428,972.00

TABLE No. 5—*Showing a general comparison between the years 1887, 1888, 1889 and 1890.*

	1887.	1888.	1889.	1890.
Number of persons employed,	14,793	16,918	17,890	18,257
Number of tons of coal mined per life lost,	91,108	75,141	83,758	115,357
Ratio of employes per life lost,	$284\frac{29}{52}$	$264\frac{11}{32}$	$344\frac{1}{26}$	$468\frac{5}{39}$
Number of tons of coal mined per person injured,	35,355	33,304	30,025	36,603.07
Tons of coal mined per employe,	327	$278\frac{1}{2}$	$243\frac{7}{19}$	242.59

TABLE No. 6—*Showing the number of persons employed by the several companies and the number of deaths.*

NAME OF COMPANY.	Number of deaths.	Number of employes.
Philadelphia and Reading Coal and Iron Company,	22	8,524
Mineral Railroad and Mining Company,	3	1,400
Summit Branch Railroad Company,	4	1,198
Lykens Valley Coal Company,	2	1,005
Union Coal Company,	2	1,653
L. A. Riley & Co.,	4	1,052
Individual collieries,	2	3,425
Total,	39	18,257

Report of Accidents.

I herewith give a report of the causes which led to several of the fatal accidents which occurred in the district during the year.

It is very evident, that the largest percentage of the fatal accidents are caused through falls of coal and roof, and by mine cars and machinery.

Paul Ondo, a miner, 28 years old, was fatally injured at Mt. Carmel colliery, on the 9th day of January, and died from the effects of the injuries the same day; when the accident happened he was in the act of barring down a piece of top coal, and after working at it for a short time he concluded to leave it stand and commenced loading a buggy, while so doing and without warning it fell and struck the end of the drill which he held in his hand, the drill was forced by the coal against his privates, rupturing him so badly that he died as above stated.

Isaac Wilberts, a laborer, 29 years old, was instantly killed at Williamstown colliery, January 29th, by a fall of top rock; when the accident happened he was engaged shoveling coal from the face of the gangway to a point where he could throw it into a mine wagon. While so employed, and without any warning, a large bell shaped piece of top-rock fell on him; in my examination of this working place, I found the vein carried an excellent top generally speaking, occasionally a bell-shaped piece detached from the main top would be met with, which, if not watched carefully, was liable to kill or injure the person working under it.

Alfred Dando, a miner, aged 36 years, was killed at Williamstown colliery, February 10, by a fall of top slate, he had fired a shot in the vein under the piece of slate, which fell on him; when he returned after the firing he sounded the piece and considered it safe to work under; he then commenced shoveling the loose coal, which the shot had thrown out; while so engaged the piece of slate fell on him and killed him instantly. Deceased was considered a good practical miner and was working in a comparatively safe place, but the slate which fell on him had been cut off by a seam next to the face, which allowed it to fall without warning.

Alexander Grifiski, a laborer, aged 45 years, was killed at the Hickory Swamp colliery of the Union Coal Company on March 17; when the accident happened he was employed picking coal for the purpose of making a sump; he was told by his fellow workmen that a large piece of slate, which stood under, was loose and likely to come down; he moved from under it for a few minutes and then commenced to work under it again when the piece fell on him and crushed him against the bottom killing him.

Thomas Shuren, a miner, aged 35 years, was killed at Locust Spring colliery March 29. He was employed skipping pillars in number eight vein, east gangway shaft workings in breast forty-six; when the acci-

dent happened, he was in the act of shoveling coal into a wagon which he intended to be the last for that day, a bad piece of division; slate was hanging over where he was working and in a seam of coal above this slate he had bored a hole, which he was to fire after the wagon was loaded, to take down this bad piece. It did not wait however, for him to blast it down, but fell while he was loading the wagon, striking and pinning him against the ribs and killed him almost instantly; as in numerous similar cases the poor fellow took the risk and unfortunately lost his life so doing. No doubt had he thought the piece as bad as it proved to be, he would certainly have taken it down in time.

David Hower, a fireman, aged 27 years, was fatally injured by a boiler explosion at Logan colliery, March 30, and died the next day from the effects of his injuries; when the accident happened he was standing in front of a boiler which exploded; the escaping water and steam was blown all over his body scalding him so severely that he died as above stated.

James Townsend, a car runner, aged 28 years, was killed at the Enterprise colliery May 1; when the accident happened he was running a wagon down No. 1 plane gangway. He failed to remove the cross tongue connecting the breast road with the main gangway; when the front wheel of the mine wagon struck the tongue, it jumped the track and caught his head between the wagon and gangway timber, squeezing him so badly that he must have died immediately. When found he was lying on the low side of the gangway opposite to the wagon, which was jammed against his leg and no doubt had caught him when it left the track.

Julius Haude, a miner, aged 46 years, was killed by falling down the tender slope at Merriam colliery, May 3; he in company with nine other men, were coming up the slope after finishing their day's work. Haude was standing outside of the front end of the wagon in company with another man; he had hold of the spreader chain, but when the wagon came to a point in the slope where the pitch is very heavy, for some reason not known to any one, he released his hold on the chain and fell under the wagon, which passed over him. He then rolled down the slope to a point where it is almost flat; when found a few minutes later life was extinct. It is the opinion of some of the men who were on the wagon with him, that he became dizzy and could not control himself.

John Ambrose, a gangway laborer, aged 28 years, was killed at Big Mountain colliery May 24, by a fall of top slate; when the accident occurred he was shoveling coal from the face of the gangway, preparatory to throwing it into a mine wagon, and while so employed a large piece of slate fell from the roof of the gangway striking him on the head and back and killed him instantly.

Henry Weikel, a miner, aged 22 years, was killed at the Pennsylvania colliery of the Union Coal Company, May 27; when the accident oc-

curred he was engaged firing a shot on the west rib of the breast. The vein pitches at this point about 57°, and through some means not known to any one, he lost his balance and fell down the manway and rolled to the bottom of the breast. His "butty" went to his rescue and found him in an insensible condition. He never regained consciousness and died in a few minutes after being found.

Lewis Helwigh, a miner, aged 27 years, was killed at Williamstown colliery, May 29; he was working in the gangway of the Little Lykens Valley vein, east tunnel level; he had finished his day's work and was on his way home; when he reached a point known as the foot of the plane, a large piece of top slate fell on him crushing his head and side badly, from the effects of which he died in a few minutes. At the point where the accident occurred both members of the Lykens Valley veins run close together; a squeeze is acting on the measures all the time and falls occasionally takes place on the gangway; in this particular case I am inclined to think that the fall was caused through a crush immediately above it.

John Cavanaugh, a miner, aged 25 years, was killed by a fall of top coal at Locust Spring colliery, June 29; he was working in breast No. 164, bottom split west gangway, and when the accident occurred he was engaged taking down a piece of top coal; he and his "butty" had put in two props for the purpose of securing the top slate from falling, thus allowing the piece of coal, which afterwards fell on him to hang or rest partly on one of the said props; when he commenced barring at it, owing to its being fast on the prop, it did not break off as short as he thought it would; on the contrary it came down directly over his head striking and killing him instantly.

Evan Harris, a miner, 31 years of age, was killed by the premature explosion of a blast, at the Sterling colliery, July 2; he and his "butty" had tamped two holes; they then put the fire to them and retreated to a place of safety; one of the holes exploded and after waiting a short time Harris went to examine the one that had missed; he had reached the face of breast and was about to make an examination when the shot went off; he was struck by the driving pieces of coal and fatally injured, dying soon after. If men would take the precaution to fire not more than one shot at a time many of the accidents occurring from this cause would be averted.

John Halick, a gangway laborer, aged 18 years, was killed at Short Mountain colliery, July 11; on his way home from work a trip of mine wagons was about to start from the turnout and he concluded to wait and ride out on the front end of the trip with the driver; when they came to a point on the road which had a heavy grade, the driver got off for the purpose of putting in some sprags; this naturally caused the wagons to jerk, and Halick was thrown off and fell under the wagons; the whole trip of ten loaded wagons passed over him; when found life was extinct.

Joseph Lipinski, a miner, aged 24 years, was killed by a fall of top coal at Logan colliery, July 22; in my examination of his working place, I found the vein to be very hard, the benches in a great many places being cut off with slips and seams; one of those benches projected from the rib some four feet, with a slip running through it that paralleled with the pillar; this no doubt allowed the piece to break off; Lipinski was drilling a hole immediately under it when it fell, striking him, from the effects of which he died a few hours afterwards.

Robert Lipsett, a loader and driver, aged 25 years, was killed at Bear Valley colliery, July 25; when the accident happened he was on his way out to a turnout with a loaded trip; he stood on the high side of the wagon and failed to see his danger until caught by a chute which projected over the end of the wagon; his body was pulled in between the wagon and chute and crushed in a terrible manner; it required probably a half an hour to remove it. When taken out he was dead. This is one of those unfortunate accidents by which any person might be trapped. Lipsett was a smart active young man and had worked in the mines all his life.

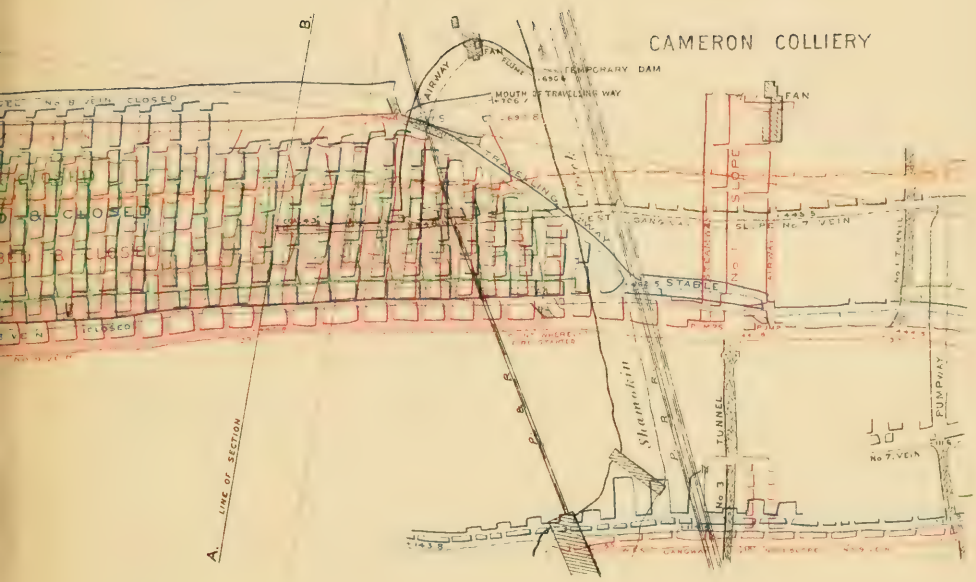
Alexander Muir, a driver, aged 16 years, was killed at Big Mountain colliery, July 31; when the accident occurred he was on his way into the drift with a trip of empty wagons. A boy named Scrambo who was hired to signal the drivers as to when they could go in or come out, gave the driver who was standing inside the signal to come ahead, both teams collided on the single track catching Muir between the wagons and the mules; Muir was crushed against the rib and must have been instantly killed.

John Covoc, a driver, aged 16 years, was killed at Bear Valley colliery, November 22, while coming out with a trip of two loaded wagons from the East South dip gangway. By some means unknown he fell under the wagons and was run over and killed. In my examination of the place where the accident oocurred, I found the gangway in good condition having ample room and an easy grade. My impression is that Covoc must either have lost his light or stumbled and fell under the wagon.

MINE FIRES.

The Cameron mine, operated by the Mineral Railroad and Mining Company, was discovered to be on fire on the night of February 26, 1890; the fire was discovered about 8.45 p. m. The place where the fire was first discovered is known as No. 9 vein west gangway. A line of steam pipe was laid on this gangway for the purpose of conveying steam to No. 2 or west slope engines. The heat generated by this steam line made the timber in this gangway very dry, thereby allowing the fire to make rapid progress. Superintendent Morris Williams and Mine Foreman Edward Brennan were notified immediately after the fire was discovered, and hastened to the mine and at once commenced battling with the fire.

WEST DANGWAY No. 1 VEIN
BREAST
WEST DANGWAY No. 1 SLOPE


CAMERON COLLIERY
No 8 VEIN CLOSED
CLOSED
CLOSED
CLOSED
AIRWAY
FAN FLUME
TEMPORARY DAM
MOUTH OF TRAVELLING WAY
FAN
SLOPE
No 1
No 7 VEIN
STABLE
Shamrock
TUNNEL
No 3
No 7 VEIN
PUMPWAY
A
B
LINE OF SECTION

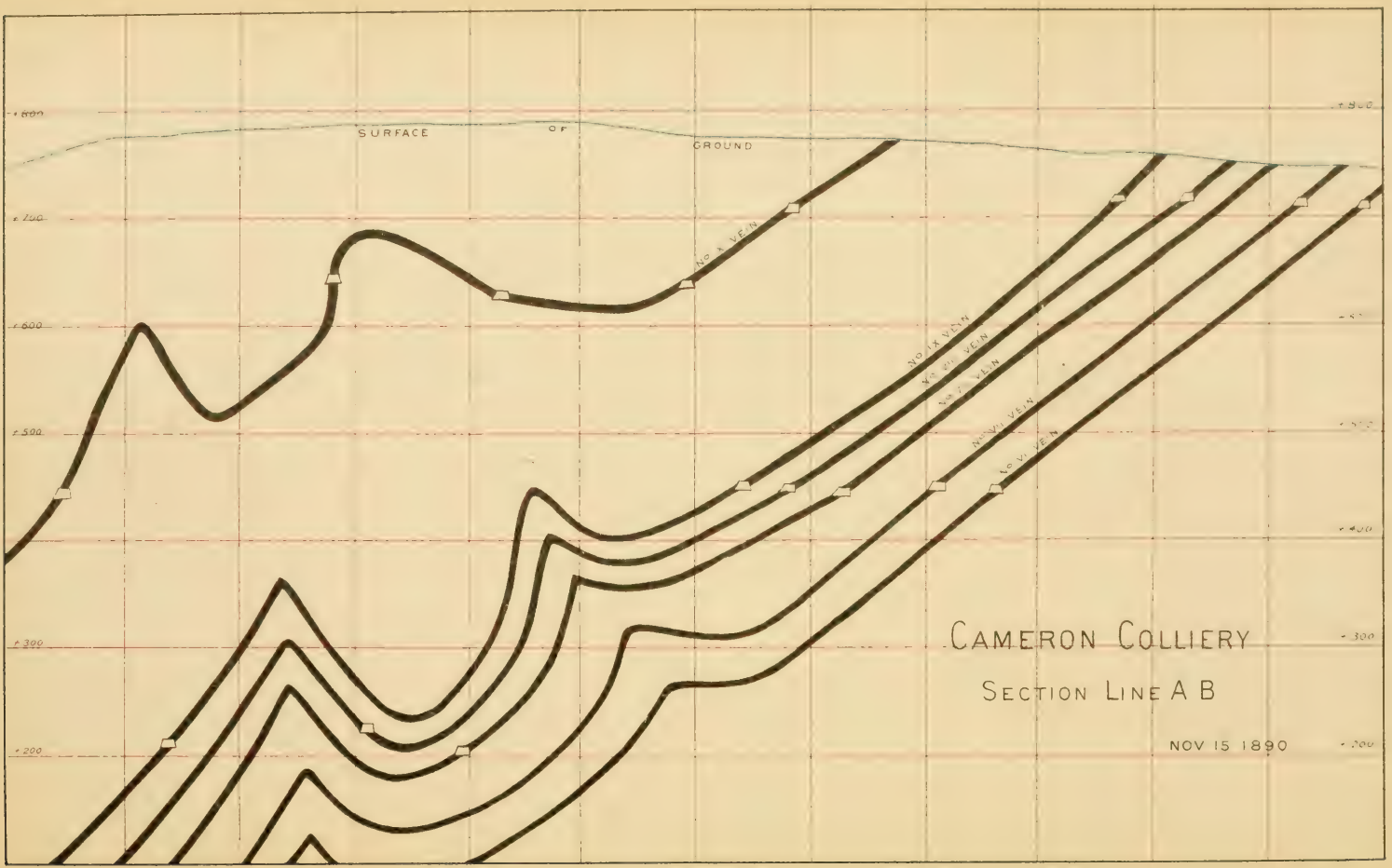
After a heroic struggle of more than two hours, both men were overcome by the smoke and gas generated by the fire, and had to be removed to their homes. The assistant bosses and a large number of workmen continued to fight the fire, but despite their efforts it gained on them rapidly. The fire was burning westward, it being impossible to reach that end with the hose, as will be seen by accompanying sketch. The numbers seven and a-half, eight and nine veins run very close together and all of them were robbed out and closed for years. It was then decided to run two lines of gas pipe from the foot of No. 1 slope east to a tunnel, then north to No. 6 vein, then west to a tunnel west of No. 2 slope, then south to the No. 9 vein, then east on No. 9 vein to the west end of the fire. This necessitated the laying of more than two miles of gas pipe. This work was accomplished in the incredible short space of fifteen hours. Hose lines were then attached and two streams of water poured on the fire. After a hard fight the progress of the fire westward was checked, and it was then decided to make a small opening along the gangway eastward, which was closed by the fire burning out all the timbers the men carrying hose as they went and extinguishing all fire encountered. An opening was also made on the line with the first or chute heading. A line of hose was carried through this opening also, and the fire which was met with between this heading and gangway was extinguished as they progressed with the opening. In this way the fire was extinguished for a distance of three hundred and fifty feet. In the meantime the fire had burned up the pitch some two hundred feet. Holes were then driven from the water level of the west gangway through the chain pillar into old finished breasts and immense quantities of water were poured down through these holes, but owing to the broken condition of the measures between the veins the water did very little good. The heat generated by the fire became intense, and gases accumulated in large quantities in the old worked out breasts. Fearing the fire would get above the water level and after fighting it for about seven weeks, it was decided to flood the mine on April 4th. As there are more than seventeen miles of gangways below water level and the mine being one which accumulates large quantities of water, the question of removing the water after flooding was a very serious one.

The creek was turned into the mine on April the 6th, and on the 13th, after pouring in about 800,000,000 gallons of water, along with that given off by the mine, it was filled and the fire was extinguished. The water was then allowed to remain in the mine until May 16, when the work of removing it commenced. To do this work six pumps were used, also two tanks, four feet in diameter and twenty feet in length, to hoist water from the No. 1 slope. The water was lowered at the rate of two and a half feet vertically each 24 hours, and on August 28 the pumps at the bottom of No. 1 slope were reached and found to be in good condition,

as were 3 engines used on this level. Before flooding the mine the machinery was painted with white-lead and the working parts which were exposed were wrapped in canton flannel soaked in tallow. The quantity of water taken out of No. 1 slope workings, was about 750,000,000 gallons, 305,000,000 gallons being hoisted by the tanks, but as about 14 miles of the 17 comprising the openings are on this No. 1 level, the work of removing the water from the lower levels was not such a serious task. On September 15, they commenced removing the water from the No. 3 slope workings; this slope extends 330 feet vertically below the level of No. 1 slope. Hoisting and pumping was resorted to, on November 2. The bottom was reached, about 75,000,000 gallons having been taken out. No. 2 or west slope is still filled with water which will not be removed until a gangway is opened through the burned district. Very little damage was done to the mine outside of the gangway closed by the fire, and the mud or dirt that was washed in by the water during the time the fire was burning. A large number of men were employed in fighting the fire and to their credit be it said a braver lot of men never assisted on such an occasion. Happily for all, no accident occurred during the whole time the fire was burning, which is something unusual at mine fires of such magnitude. The burned district is shown on sketch by cross lining, also tunnel east of No. 1 slope through which water line was run to tunnel west of No. 2 slope shows the point the water line was returned through so as to reach the west end of fire. The accompanying cross section of the several veins affected by the fire is also shown, giving the proper location of each vein and proving conclusively, I think, the difficulty of extinguishing a fire in such broken ground.

The Neilson breaker, at Shamokin, was destroyed by fire May 16, 1890. Preparations were at once begun for the erection of a new breaker on an entirely new site, and it was found necessary to remove a large quantity of coal dirt before the stone and frame work of the breaker could be commenced; it was completed in the early part of November of the same year and commenced operations; only one side, however, is in operation, owing to the underlying veins not having been cleaned up since the fire; the breaker is a model of neatness, and contains all the latest improvements. Its capacity is estimated at 1,000 tons per day.

A fire was discovered in breast 71, No. 9 vein, east gangway of the Buck Ridge colliery, operated by the Philadelphia and Reading Coal and Iron Company, on the 31st of August. Said fire was caused by the ignition of a blower; the men working at skipping the pillar of this breast, fired a shot the flame from which ignited the blower; the No. 8 and 9 veins are divided by a partition slate from eight to ten feet thick at the point where the fire originated; by the falling of this slate, the fire communicated with No. 9 vein which was solid. After fighting it stubbornly for more than three weeks, it became necessary to flood the mine to a point higher than the location of the fire, and preparations were at


SURFACE OF GROUND
No X VEIN
No IX VEIN
No VIII VEIN
No VII VEIN
No VI VEIN
No V VEIN
CAMERON COLLIERY
SECTION LINE A B
NOV 15 1890

once commenced to do so. A large trough was built from Shamokin creek and connected with the old Greenback water level gangway No. 9 vein. The water was then turned in and kept running some four or five days, when it was found to have extinguished the fire; it was then allowed to remain for some two or three weeks, when pumping and hoisting with boilers was resorted to. The water was removed and work commenced in about seven weeks after the pumping commenced. During the time the fire was burning, a number of men were employed fighting it, not one of whom met with any accident.

TAPPING WATERS.

During the year a large body of water has been tapped at the Mount Carmel colliery operated by Thomas M. Righter & Co., and a large body also at the Centralia colliery of Lewis A. Reilly & Co. In both cases the work was done very successfully; the plan adopted by Superintendent Righter, was to drive a small hole some five by six feet in the direction of the water for a distance of 20 feet; a power drill was then put to work and a number of holes bored through the measures; each hole was started by a three inch diameter drill and continued for a distance of 4 feet. A valve was then placed on the mouth of each hole and a drill of one and three quarter inch diameter passed through it, which was used to drill the remainder of the distance to the water; as the water was tapped by each hole, the drill was withdrawn and the valve closed until all was in readiness, such as pump drainage, etc., when the valves were opened and the water allowed to run; the total distance of the hole was 85 feet.

The plan adopted by Superintendent Edward Rees was on the same order, except that he approached nearer to the water before he tapped it finally; when within 100 feet he took the precaution of boring a hole in the roof of the tunnel at an angle of 40° for the purpose of locating the water in the old workings; the tunnel was then driven to a point 45 feet from the water, when several holes were drilled 3 inches in diameter; valves were placed on each hole as it was completed, and when the drainage tunnel was made ready to take the water, the valves were opened and the water allowed to run. The averaged distance lowered each day was about 8 feet. At present the water is almost entirely out.

IMPROVEMENTS AT THE COLLIERIES OF THE PHILADELPHIA COAL AND IRON COMPANY.

At Locust Gap colliery the following improvements have been made: A new screen six feet in diameter and nine feet long has been put in the breaker for the purpose of making rice coal. A set of conveyors 150 feet long has been erected for the purpose of conveying fuel to steam boilers. The pump slope has been enlarged for a distance of 250 yards, from a single to a double track slope. A new pump room 40 feet long, 20 feet wide and 16 feet high has been driven in the top rock to accommodate a pair of Duplex pumps.

At Locust Spring colliery the following improvements have been made. A tunnel is being driven across the Mahanoy basin; at the present time it is driven 260 yards, and it will be continued to the north dip of the Mammoth vein, thereby opening a large field of coal, which is yet untouched. From the Pine tunnel they will cut the vein to the surface; the estimated distance is 900 feet. A tunnel was also driven in the new drift, cutting the vein in good condition 5 feet and 11 inches thick. One new standard 9x38 inch steam pump has been erected at the foot of the breaker for the purpose of washing coal; three new screens have been placed in the breaker for the purpose of bettering the preparation of the coal. In Monitor colliery a tunnel 41 yards long has been driven from the Skidmore to the Mammoth vein, cutting the vein 9 feet 3 inches thick in good condition.

Merriam Colliery No. 1.—Allison and Bannan air compresser, with all connections complete, has been erected near the present hoisting slope, and will be used to furnish air to run hoisting engines, at head of the underground slope; one pair of link motion engines, 16-inch cylinders with 18 inch stroke, have been erected at the head of the said underground slope and are ready to commence hoisting as soon as some minor improvements are made; two standard 9x38 inch steam pumps have been placed in the new pump rooms at second lift, with all necessary steam and column pipes complete; a new pump room 26 feet long, 17 feet wide and eleven feet high has been made in the coal at the foot of the "tender slope." One hundred and twenty yards of underground slope has been driven in what is known as Big Run basin. This slope is not completed and will be sunk deeper in the near future. A borehole 557½ feet deep has been drilled from the surface, and will be used in connection with said slope.

The tunnel across the Mahanoy basin was extended 197 yards in 1890, making a total distance of 471 yards from the south end of long tunnel.

A tunnel twenty-nine and two-third yards long, has been driven from the Mammoth to the Homes vein, cutting the vein 3 feet and four inches thick, a new pump house 20 feet long by 10 feet wide and 9 feet high has been erected at the breaker, and a new standard 9x38 inch steam pump placed therein for the purpose of pumping water to wash coal; 2 new nests of six large steam boilers of 34 inch diameter, 43 feet and 4 inches long with all connections complete, has been added to the steam plant at slope, and 2 new boilers of 34 inches diameter and 30 feet long, have been put in place of the old boilers removed from pump hollow.

Potts Colliery.—The hoisting slope on the Mammoth vein has been extended 102 yards for a new lift. This will be the third lift, making the total distance about 900 feet; a new slope has been sunk on the Primrose vein and is down 250 yards and will be continued so as to connect with the workings of the Mammoth slope; the Primrose slope will be used as a pump and tender slope. The breaker has been rebuilt having a frontage

of 107 feet by 134 feet deep and an elevation of 106 feet from railroad to tipple; the breaker is covered with sheet iron roofing; a new breaker engine house 44 feet long by 17 feet wide, by 11 feet high, has been erected; a six-inch column pipe has been laid from the pump at first lift of Mammoth slope to water level gangway; a new standard 9x38 inch steam pump has been erected at the first lift of Primrose slope with a steam line of 513 feet and all other connections complete; 4,415 feet of Hautby pipe has been laid for the purpose of conveying water from reservoir to steam boilers. When the contemplated improvements have all been made at this colliery, and a reasonable time elapses to make openings, it will no doubt take its place as one of the best coal producers belonging to the company.

In the Bast colliery, one P. & R. duplex pump has been erected at the second lift of Buck Mountain slope, with steam cylinder 36 inches diameter, water end 12 inches diameter, and 48 inch stroke, with all seams and column connections complete; 3 additional 9x38 inch steam pumps, with all necessary column and steam pipes complete, has been added to the pumping plant at the third lift of the Mammoth slope.

The breaker has been almost entirely rebuilt and remodeled during the year; 6 new Clark gigs with all necessary connections complete have been placed in the breaker, and all the latest improved machinery has been added to the breaker proper for the better preparation of the coal.

Many additional minor improvements have been made to all parts of the plant, making this colliery one of the most complete in the region.

North Ashland.—A new hoisting slope has been sunk on the Mammoth vein and engines erected to hoist from the same; one new nest of 6 boilers 34 inches diameter by 44 feet 4 inches long, with all connections, has been placed at breaker. Several other minor improvements have been made during the year.

In Preston No. 3 colliery, a tunnel from north end of back switch at foot of hoisting slope has been completed during the year, the total distance being 32 yards; a tunnel 10 feet wide and 12 feet high is being driven from the Mammoth second lift north dip to Mammoth vein south dip the tunnel is now in about 110 yards; at a point 265 feet from Mammoth vein north dip the Buck Mountain vein was cut in fairly good condition.

In the Reliance colliery, a frame pump house 20 feet long and 14 feet wide and 8 feet high has been erected over the pump at the water level tunnel; a frame pump house has also been erected at the boiler house and several other minor improvements have been made during the year.

At Alaska shaft, a new standard 12 foot suction fan has been erected on the Skidmore vein, with a new direct acting fan engine with steam pipes and fan engine house and all other connections complete; one standard 9x38 inch steam pump has been placed in the underground slope; six standard boilers of 34 inch diameter by 43 feet 4 inches long

have been added to the steam plant; a standard rope-haulage plant has been erected connecting the shaft with the breaker, and a pair of link motion winding engines have been placed in position to operate the same; a new engine house 23 feet long, 19 feet wide and 11 feet high has been built for said engines.

In Buck Ridge colliery a new lift has been sunk on the No. 8 vein slope: this will make the seventh lift on this slope; a tunnel is being driven north from the No. 9 vein for the purpose of cutting No. 10 and 11 veins; the tunnel is now driven in 75 yards; two new standard 9x38 steam pumps have been placed in the tender slope for the purpose of facilitating the better drainage of the mine; a frame blacksmith and carpenter shop 44 feet long by 36 feet wide and 11 feet high has been erected and fitted out with all necessary appliances.

At the Henry Clay, twelve standard boilers 34 inches in diameter and 44½ feet long with all the fixtures and connections complete, have been erected. A double track dirt plane, 1,125 feet long, with tracks and dump chutes and all connections complete, has also been completed; a pair of link motion direct acting dirt plane engines of 24 inch diameter by 60 inch stroke, with a 12 foot drum and all other connections complete. Also a new frame engine house over same have also been erected. A new frame jig house with a frontage of 80 feet 10 inches, depth 102 feet 10 inches and a height of 89 feet 4 inches with jigs and screens and all necessary machinery complete has been erected for the better preparation of the coal. A ventilating fan has been placed on the top of the breaker, and is used for the purpose of removing the coal dust from employes in breakers; a new frame blacksmith and carpenter shop 86 feet 8 inches long, by 27 feet 2 inches wide and 12 feet high, has been erected; also several new minor buildings.

At Big Mountain several tunnels have been driven during the year; the No. 2 slope has been extended 104 yards into the basin of the No. 9 vein: this makes the total distance 276½ yards. A double track self-acting plane has been driven from the east No. 9 vein gangway, to old north dip working, the distance being about 100 yards; counter gangways will be opened at the head of this plane. The No. 11 vein east water level drift was started up during the year, and after driving 185 yards, the vein was developed 3 feet thick of good coal and is still improving. The hoisting engines which were used at the sinking of No. 2 slope have been removed and the engine formerly used at the Henry Clay inside slope has been erected in its stead; it consists of a pair of link motion hoisting engines 18 inch cylinder with 36 inch stroke, with all the necessary connections complete, the same being enclosed in a new frame engine house. Four Standard steam boilers 34 inch diameter by 30 feet long have also been erected. A new 9 by 38 inch steam pump has been put in No 1 slope with all column and steam pipe complete; a similar pump has been placed in number two slope.

At Sterling colliery a tunnel 113 yards long has been driven from the third lift of No 9 vein west gangway north to the No. 10 vein. A tunnel has been driven from the No. 8 vein third lift south to the No. 9 vein; two tunnels have been driven on the fourth lift, connecting the No. 8 and 9 veins; 6 standard steam boilers 34 inch diameter by 43½ feet long with a house and all connections complete have been erected. Several other minor improvements have been made.

At Bear Valley colliery two standard 9 by 38 inch steam pumps with steam and water columns complete have been placed in the new extension to pump-house; this pump-house is made in solid rock and is 65 feet long, 15 wide and 10 feet high; a column way 191 feet long has been driven in the No. 11 vein connecting with the shaft near the surface. A tunnel has been driven from the East South dip Mammoth vein tunnel gangway south to the same vein in basin; 6 standard boilers 34 inch diameter 43½ feet long and 4 boilers 34 inch diameter and 30 feet long to replace old boilers removed; a new fresh water reservoir with a capacity of 32,000 gallons has been excavated, so that water can be stored for boiler feed purposes; a new foundation has been put under the fan engine; a new frame fan engine house has also been buit, and several other minor improvements have been made.

At North Franklin a standard rope haulage with engines and house and all necessary connections has been erected connecting the slope with the breaker; two tunnels have been driven in the lower lift of the south dip slope, one on the west and one on the east side; four standard 4,000 gallon tanks have been erected with a No. 7 Blake pump for the purpose of pumping water from the creek to said tanks; a new 6x12-inch Duplex feed pump has been put up to replace the old Carter and Allen pump, which was worn out.

At Cameron colliery a set of Babcock and Wilcox boilers with house and all necessary connections have been erected; two Cameron pumps for feed purposes have also been put up, and a new pump engine house has been made in No. 10 slope, also one in No. 5 slope.

At Luke Fidler a new trestle has been erected, also pockets for retail coal sale. No. 2 slope has been extended for a new lift. A new engine house and stable has been made in this slope, and a self-acting plane and new engine house made in No. 1 slope and a new pump placed therein.

At Pennsylvania colliery three tunnels have been driven on the three different levels to what is known as the leader over No. 9 vein, the aggregate distance being 140 yards. A new self-acting plane has been made in No. 3 level. No. 1 level has been supplied with an additional steam pump 36x72 in cylinder, and 16x72 in water end, with all necessary steam and column pipes complete.

At Ferndale colliery a new dump chute with a double platform was built during the year; three new Stroh jigs were put in the breaker;

also a new set of rolls all of which was done for the better preparation of coal.

At Bellmore colliery four new boilers 30 inches in diameter, 42 feet long, have been added to the steam plant. A tunnel has been driven from the Home to the Primrose vein; when the tunnel was driven in 62 feet, the vein was cut 9 feet thick of good coal.

At Morris Ridge two new boilers 34 inches in diameter, 30 feet long, have been added to the steam plant; two new steam pumps were erected during the year; one 7x18 Gone pump, also one 10x37 of the same make. The Buck Mountain slope is being extended for a new lift.

Centralia colliery, No. 2 slope, north dip, Buck Mountain vein has been timbered for a distance of 300 feet single track; the fanway on south dip, same vein, has been driven from the third to second level, so as to make an air connection for the new work, which is about to be commenced. A pair of link motion hoisting engines 26-inch cylinder by 36-inch stroke have been erected to hoist from the new lift on north Dip to Buck Mountain vein. The drum is so arranged, that the said pair of engines can hoist from a 450 foot level, also from a 750 foot level.

Mid Valley.—The breaker which was reported in the last annual report as being in course of erection, has been completed and in operation since January, 1891.

A slope has been sunk on the Primrose vein on the north line of breaker; all coal which is mined below water level will be hoisted from this slope. A tunnel is now being driven at foot of said slope, south to the Mammoth vein for the purpose of opening up the first lift below water level. A tunnel will also be driven north so as to cut the south dip of the Primrose and all underlying veins. If this mine is opened up as at present proposed, it will give employment to a large number of persons. A number of dwelling houses have also been erected for the use of the employes of the colliery. The "Patterson Anthracite Mining Company," is the title of a new firm that has commenced to make improvements during the year. The mine is located about four miles northwest of Mount Carmel; the present improvements consist of a slope on Buck Mountain vein, which is 915 feet on pitch, the average dip being 11°. A slope is being sunk on vein underlying the Buck Mountain; a new breaker has been erected and 60 houses for miners have been built for the use of the employes.

Drifts are being opened on the underlying or Lykens Valley veins, and should this mine develop as favorably as expected it will have a good shipping capacity.

EXAMINATIONS OF APPLICANTS FOR MINE FOREMAN.

The following named named passed successful examination and were granted certificates of qualification:

George Steel, ... Shamokin.

Arthur Kennedy, ... Shamokin.
August C. Herr, ... Shamokin.
Joseph Cardwell, ... Shamokin.

The following named passed examination and were granted certificates in 1889, but their names were not published in my report of that year, owing to an oversight.

Henry Snell, ... Centralia.
Richard Kealy, ... Centralia.
James Ryan, ... Ashland.
William Gillespie, ... Ashland.
Thomas D. Howels, ... Ashland.
Martin McLaughlin, ... Ashland.
Adam Boyer, ... Shamokin.
Peter Drumheiser, ... Shamokin.
John Drumheiser, ... Shamokin.
Joseph Ford, ... Shamokin.
Bryam Denman, ... Shamokin.
Thomas V. Denman, ... Shamokin.
Michael Carden, ... Girardville.
P. F. Brennan, ... Girardville.
John Cowley, ... Strong.

The Commonwealth of Pennsylvania, *ex-relatione* William MacMurtrie, Inspector of Mines for the Sixth district, etc., complaintant.

vs.

"J. Langdon & Company, Incorporated," and Henry S. Gay, superintendent, defendants.

IN THE COURT OF COMMON PLEAS OF NORTHUMBERLAND COUNTY. IN EQUITY. No. 177.

In the matter of the rule on defendants to show cause why the special injunction should not be continued.

By the Court:—Many of the facts in this case are not disputed. The second section of article V, of the act of the 30th of June, 1885, enacts that, "From and after the passage of this act, it shall not be lawful to place any boiler or boilers for the purpose of generating steam under or nearer than 100 feet to any coal breaker or other structure, in which persons are employed in the preparation of coal: *Provided*, That this section shall not apply to breakers already erected, or that are in course of erection." When the act was passed the defendants' original breaker was "in course of erection." After its passage the breaker was completed and operated for a time, when all was destroyed by fire, except the boilers, which, according to the definition of terms, in article XIX, of the act, we think, were a part thereof. It is unnecessary to determine whether, if it were proposed to rebuild the breaker on the original site, the defendants' would be protected by the proviso of the act, or whether

such re-building would be regarded as "placing the boilers under or nearer than 100 feet to the breaker," under the circumstances. Ordinarily, to first put the boilers in place, and then erect a breaker under or nearer than the law permits, would be a violation of the statute, as much so as to erect the breaker first and then place the boilers within the forbidden distance. In the present case, the boilers were placed for the original breaker, and are to remain as they were so placed and used and another and similar breaker built at a distance of seventy-five feet therefrom. In other words, there is to be a new breaker or structure erected upon a different foundation or site, placed nearer to the boilers than 100 feet.

The purpose of the act, as expressed in the title, was, "to provide for the health and safety of persons employed in and about the anthracite coal mines of Pennsylvania, and for the protection and preservation of property connected therewith." It should receive a liberal construction and be enforced so as to carry out the object and intention of the legislature. Experience has made manifest the great danger of placing the necessary machinery for generating steam at coal breakers (and especially where, as this one, the breaker is located immediately over the mouth of a shaft), under or very near the same, yet the legislature did not see proper to put the owners of such as were already erected, or in course of erection, to the expense of re-building or even removing the boilers, and for this reason the proviso was inserted in the statute. When, however, a breaker is destroyed so that it is necessary to erect another the reason ceases, and the builders must comply with the provisions of the act.

This is an important case. It is alleged by the defendants, that in consequence of the peculiar topography of the ground, where the colliery was erected and the shaft located, it is impracticable to construct the new breaker 100 feet from the boilers, or in any other location than that which they have adopted, in preference to the erection of a breaker in the old location immediately over the mouth of the shaft or at some point near the boilers, and that the removal of the breaker 25 feet further from the boilers would not only entail an unreasonable expense on them in the removal of a large part of an extensive heap of coal-dirt, some two or three hundred feet high, but would require the erection of the breaker at such a point as to endanger the safety thereof by fire. They also allege that they do not own sufficient ground, and cannot purchase more in order to erect a breaker 100 feet from the boilers. This is certainly unfortunate, and the court would relieve the defendants if it could, but it cannot. On the other hand, the witnesses for the complainant say, that there are two banks or lifts of the same bank, one extending from the base of the foundation of the new breaker to a height of thirty to thirty five feet, upon the top of which the rear portion of the breaker, as the defendants propose to erect it, will rest and which will

surround such rear portion of the breaker on both sides (north and south), and the other or upper bank or lift immediately above the first, a 100 or perhaps a 150 feet high, and at or for some considerable distance from the new breaker, as at present intended to be located, or at the location south the legal distance from the boilers, is quite shallow, for the reason that the dirt is deposited on the declivity or pitch of mountain, and the surface of the culm or dirt is but a few feet above the surface of the ground, that it would be necessary to remove a portion of the upper dirt-bank, in order to place or locate the new breaker at the legal distance from the boilers, but that, owing to its shallowness and its nearness to the railroad, the expense would be trifling; that the only obstacle to the removal of the location would be the cost of removing the dirt of the upper bank which would be but trifling, and the building of a short low wall at a small expense, to prevent the dirt from sliding down, together with the cost of additional cutting in the lower back, and that the total cost would not be more than three or four hundred dollars. That the proposed location of the new breaker is on the coal bank, and to place it at the proper distance as required by law, as indicated on the ground, would in no event increase the danger of its destruction by fire, as all the additional dirt immediately around the breaker could be removed and the breaker rest on the surface of the ground which is but a small distance below the surface of the culm bank at or near the point upon which the breaker would rest, in which event there would be little or no more coal-dirt around the breaker than there would be if located as defendants propose, and that to construct the breaker 100 feet from the boilers would be practicable and would not subject the defendants to unreasonable expense.

The complainant's witnesses also say, that they have examined the nest of boilers, and that 100 feet from the breaker could be easily obtained by moving the southern couple or pair from their present location, and that there is room enough either northeast or northwest of the present location of the boilers for that purpose, and to do so would be easy and practicable. If this is so, it would perhaps, obviate the serious difficulty which is alledged on account of defendants not owning the land at the place to which the breaker would, have to be erected so as to get 100 feet from the boilers. I would perhaps, have no difficulty in determining the question as to the defendant's right to erect their breaker at the place where they are now building a foundation, but whether they can be restrained by injunction in this proceeding, at this time, is another matter. The proceeding is under article XVI of the statute. Notice of the application was given as therein provided, that portion of the act only authorizes the court to prohibit by injunction or otherwise, "the working of any mine or colliery, in which any person is employed or is permitted to be for the purpose of working in contravention of this act, etc." The prayer of the bill is in substance, that defendants be restrained

from building, erecting or constructing the coal breaker now in course of erection nearer than 100 feet to the boilers. The defendants are not now working the mine or colliery and cannot do so until the breaker is completed, and as no harm can be done to any one until it is finished, and the boilers used, it will be in time to renew the application for an injunction to prohibit the working of the mine or colliery when that time arrives. It is a well-established principle, that in all proceedings under an act of assembly, the provisions thereof must be strictly pursued in order to give jurisdiction. A preliminary injunction is the strong arm of the law, and is never to be exercised except in a clear case. If there is a legal doubt, the remedy must be withheld until final hearing.

I have extended this opinion somewhat, because it was intimated at the argument that both parties desired the views of the court on the merits of the case. I have endeavored to be plain, so that anything that may be done hereafter, will not be on account of a want of knowledge as to what the opinion of the court is in reference to the question presented. It is our duty to enforce the law as it has been made by the legislature. If we do not and an accident should occur by which lives would be lost the responsibility would be upon us, a risk which we cannot be expected to incur.

The special injunction is dissolved, to be without prejudice however, and with leave to renew the application at the proper time.

By the court,

WM. M. ROCKEFELLER.

Table I—*Showing location of collieries in the Sixth Anthracite District.*

Name of Colliery.	Name of operator.	Location.	Name of superintendent.	Postoffice address.
Alaska	Philadelphia and Reading Coal and Iron Co.	Mt. Carmel twp., Northumberland county	John Veith	Pottsville, Pa.
Reliance	" " "	" " "	"	"
North Ashland	" " "	Conyngham township, Columbia county	"	"
Bast	" " "	Big Mine Run, Schuylkill county	"	"
Tunnel	" " "	Ashland, Schuylkill county	"	"
Keystone	" " "	Locustdale, Schuylkill county	"	"
Potts	" " "	" " " "	"	"
Merriam	" " "	Mt. Carmel twp., Northumberland county	"	"
Monitor	" " "	" " "	"	"
Locust Gap	" " "	" " "	"	"
Locust Spring	" " "	" " "	"	"
Buck Ridge	" " "	Coal township, Northumberland county	"	"
Big Mountain	" " "	" " "	"	"
Peerless	" " "	" " "	"	"
Henry Clay	" " "	" " "	"	"
Sterling	" " "	" " "	"	"
Burnside	" " "	" " "	"	"
Bear Valley	" " "	" " "	"	"
North Franklin	" " "	" " "	"	"
Preston No. 2	" " "	Preston Hill, Schuylkill county	"	"
Preston No. 3	" " "	Girardville, Schuylkill county	"	"
Locust Run	" " "	Conyngham township, Columbia county	"	"
Pennsylvania	Union Coal Company	Coal township, Northumberland county	Holden Chester	Shamokin, Pa.
Hickory Swamp	" "	" " "	"	"
Hickory Ridge	" "	" " "	"	"
Excelsior	Excelsior Coal Company	" " "	A. Robertson	"
Corbin	" "	" " "	"	"
Enterprise	Enterprise Coal Company	" " "	F. J. Morgan	Excelsior, Pa.
Mt. Carmel	Thos. M. Righter & Co.	Mt. Carmel, Northumberland county	Thos. M. Righter	Mt. Carmel, Pa.
Logan	Lewis A. Riley & Co.	Centralia, Columbia county	Edward Reese	Centralia, Pa.
Centralia	" "	" " "	"	"
Morris Ridge	May, Troutman & Co.	Conyngham township, Columbia county	James May	Shamokin, Pa.
Bellmore	S. S. Bickel & Co.	" " "	Tobias Bickel	Mt. Carmel, Pa.
Continental	L. V. Coal Company	" " "	D. P. Brown	Lost Creek, Pa.
Williamstown	Summit Branch Railroad Company	Williamstown, Dauphin county	F. M. Williams	Lykens, Pa.
Short Mountain	Lykens Valley Coal Company	Wiconisco, Dauphin county	"	"
Cameron	Mineral Railroad and Mining Company	Shamokin, Northumberland county	Morris Williams	Shamokin, Pa.
Luke Fidler	" " "	" " "	"	"
Neilson	J. Langdon & Co.	" " "	H. S. Gay	"
Lancaster	Smith & Keiser	Coal township, Northumberland county	Wm. Smith	"
Big Mine Run	J. Taylor estate	Big Mine Run, Schuylkill county	Wm. Morgan	Ashland, Pa.
Black Diamond	Llewellyn, Nagle & Co.	Mt. Carmel, Northumberland county	Wm. Llwellyn	Shamokin, Pa.
Mid Valley	Righter, Leisenring & Co.	" " "	Frank G. Clemens	Mt. Carmel, Pa.

TABLE II.—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Anthracite district for the year ending December 31, 1890.*

NAME OF COLLIERIES.	Location.	Total production in tons of coal.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	
Alaska	Alaska, Northumberland county	188,161	177,510	189.45	706	3	3	4,370	39	82	1	550
Reliance	Mt. Carmel, Northumberland county	129,982	122,643	179.95	430	1	1	3,000	24	35		
North Ashland	Centralia, Columbia county	155,550	146,745	232.18	573		2	3,650	34	47	1	6,550
Bast	Ashland, Schuylkill county	71,243	67,210	148.20	608		4	1,230	34	51		4,431
Tunnel	" "	77,258	72,285	166.35	309	1	4	25	20	32		1,700
Keystone	Locustdale, Columbia county	55,314	52,183	135.55	298			40	16	31		410
Potts	" "	1,012	955		99			125	24	9		500
Merriam	Locust Summit, Northumberland county	128,869	121,575	194.70	623	2	3	3,400	39	74		3,800
Monitor	Locust Gap, Northumberland county	58,245	54,948	142.65	305		2	425	18	39		1,300
Locust Gap	" " "	241,749	228,065	249.80	581		2	3,200	25	40		2,050
Locust Spring	" " "	190,083	179,324	243.30	484	3	7	3,500	28	67	2	3,400
Buck Ridge	Shamokin, Northumberland county	57,194	53,957	168.80	194	1	3	850	25	20		2,300
Big Mountain	" " "	*	*	*	544	4	5	5,400	20	*	1	8,300
Peerless	" " "	*	*	*	*			*	*	*		
Henry Clay	" " "	385,082	363,285	207.30	859		3	2,735	44	203	2	550
Sterling	" " "	*	*	*	303	2	7	2,350	20	*		2,600
Burnside	" " "	162,177	152,997	210.30	606	2	10	2,950	16	51		4,100
Bear Valley	" " "	136,119	128,414	255.85	381	3	2	2,700	28	44	1	1,500
North Franklin	Treverton, Northumberland county	44,206	41,704	98.30	397	1		725	10	43	1	1,800
Preston No. 3	Girardville, Schuylkill county	5,690	5,374		199		1	645	22	8	1	7,500
Preston No. 2	" "				14		1		14	5		
Locust Run	Ashland, Schuylkill county	Pumping	water only.		11		1		15	5		
Continental	Centralia, Columbia county											
Patterson	Bear Gap, Northumberland county				99		1					
Mid Valley No. 1	Mid Valley, Northumberland county				199			333	25	9		
Big Mine Run	Ashland, Schuylkill county	91,982	85,154	231.50	295		2	1,885	22	43	2	
Bellmore	Bells Tunnel, Northumberland county	62,150	58,411	130	252		2	2,095	16	29		
Ferndale	Mt. Carmel, Northumberland county	31,722	26,242	195	200		3	930	14	14		

Neilson,	Shamokin, Northumberland county,	30,526	27,142	30.25	766	1	3	1,206	19	53	. . .	. . . . .
Pennsylvania,	Mt. Carmel, Northumberland county,	237,375	227,375	189.25	846	1	11	7,162	41	96	2	. . . . .
Hickory Ridge,	Shamokin, Northumberland county,	99,268	91,873	148.25	474	. . .	2	2,618	24	39	. . .	. . . . .
Hickory Swamp,	" " "	40,991	35,785	89	343	1	4	1,375	15	27	. . .	. . . . .
Cameron,	" " "	156,014	125,647	197.50	675	1	1	5,804	41	77	2	. . . . .
Luke Fidler,	" " "	214,062	192,402	231	725	2	5	4,439	20	73	1	. . . . .
Williamstown,	Williamstown, Dauphin county,	303,438	297,271	282.40	1,198	4	7	10,316	75	131	4	. . . . .
Short Mountain,	Wiconisco, Dauphin county,	274,052	265,803	271	1,005	2	7	3,196	77	139	3	. . . . .
Excelsior,	Excelsior, Northumberland county,	168,039	158,523	272	424	. . .	. . .	4,265	24	54	. . .	. . . . .
Corbin,	" " "	58,574	55,259	277	158	. . .	1	3,456	5	7	. . .	. . . . .
Enterprise,	" " "	111,877	105,120	196.25	383	1	3	2,547	36	30	2	. . . . .
Morris Ridge,	Conyngham township, Columbia county,	58,478	52,475	198.50	217	. . .	5	1,703	16	19	. . .	. . . . .
Mt. Carmel,	Mt. Carmel, Northumberland county,	74,050	68,870	176.70	334	1	1	3,030	33	31	1	. . . . .
Logan,	Centralia, Columbia county,	139,699	122,814	190.50	482	4	5	5,341	32	40	1	. . . . .
Centralia,	" "	189,401	158,007	185	550	. . .	2	3,500	28	56	1	. . . . .
Totals,		4,428,972	4,123,347	†166.17	13,257	39	121	109,115	1,084	1,848	29	58,341

*Included in Henry Clay. †Average days worked.

TABLE III—*Showing the Number of each class of employes at each Colliery in the Sixth Anthracite District, during the year 1890.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE							GRAND TOTAL INSIDE AND OUTSIDE.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Alaska	3	230	27	79	44	19	402	1	12	11	196	83	1	304	706
Reliance	2	143	29	31	17	5	227	1	4	12	126	58	2	203	430
North Ashland	3	144	33	110	15	11	316	1	12	15	153	75	1	257	573
Bast	6	123	38	79	9	14	269	1	6	24	111	166	1	339	608
Tunnel	5	36	14	71	10	7	143	1	6	17	81	59	2	166	309
Keystone	5	56	. . .	49	10	10	130	1	7	12	91	56	1	168	298
Potts	1	14	14	20	. . .	3	52	1	2	15	. . .	29	. . .	47	99
Merriam	7	195	57	88	26	15	388	1	28	18	100	87	1	235	623
Monitor	3	81	22	61	12	4	183	1	3	9	65	43	1	122	395
Locust Gap	5	188	33	102	17	10	355	1	8	21	111	84	1	226	581
Locust Spring	5	154	28	76	18	5	286	1	5	12	119	60	1	198	484
Buck Ridge	3	57	8	42	. . .	4	114	1	5	11	. . .	56	1	80	194
Big Mountain,*	5	283	113	78	53	12	544	. . .	. . .	. . .	. . .	. . .	. . .	. . .	544
Peerless,*															
Henry Clay,*	4	102	44	56	19	6	231	3	18	29	351	224	3	628	859
Sterling,*	4	138	38	64	13	2	259	1	4	7	. . .	31	1	44	303
Burnside	4	213	74	39	28	7	365	1	7	10	137	85	1	241	606
Bear Valley	3	127	30	41	13	6	220	1	9	13	59	78	1	161	381
North Franklin	3	91	17	45	20	6	182	1	9	9	87	108	1	215	397
Preston No. 2	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	6	. . .	8	. . .	14	14
Preston No. 3	2	40	33	27	2	4	108	1	6	12	34	37	1	91	199
Locust Run	. . .	. . .	. . .	. . .	. . .	. . .	. . .	1	. . .	5	. . .	5	. . .	11	11
Big Mine Run	1	77	23	44	10	4	159	1	4	10	81	38	2	136	295
Centralia	2	125	50	106	20	13	316	1	12	23	120	74	4	234	550
Logan	1	140	38	75	15	8	277	1	8	22	125	65	4	225	502
Continental	1	15	. . .	14	. . .	. . .	30	. . .	3	7	. . .	16	. . .	26	56
Morris Ridge	1	47	18	42	5	3	116	2	3	10	38	46	2	101	217
Bellmore	1	70	19	30	12	11	143	1	7	17	37	43	4	109	252
Mt. Carmel	1	129	21	35	24	3	213	2	4	19	53	39	4	121	334
Mid Valley No. 1	1	51	41	38	. . .	. . .	131	1	6	4	. . .	51	6	68	199

Ferndale	2	88	25	13	7	. . .	135	1	3	8	30	21	2	65	200
Patterson	1	9	24	33	. . .	1	68	. . .	6	4	. . .	85	2	97	165
Pennsylvania	1	375	60	138	40	16	620	1	6	17	90	100	2	216	846
Hickory Ridge	1	172	20	86	20	10	309	1	4	9	90	60	1	165	474
Hickory Swamp	1	120	15	42	20	7	205	1	5	11	68	52	1	138	343
Excelsior	4	162	59	26	22	3	276	2	6	10	70	46	4	136	412
Corbin	1	53	25	5	6	. . .	90	2	2	4	32	24	2	66	156
Enterprise	1	102	62	48	14	5	232	1	8	22	58	58	4	141	383
Neilson	6	284	93	138	36	. . .	557	2	8	16	131	49	3	209	766
Luke Fidler	3	235	70	142	41	15	506	1	13	14	109	79	3	219	725
Cameron	3	164	45	128	37	13	390	1	16	23	141	101	3	285	675
Williamstown	1	345	245	98	70	26	789	2	20	44	190	150	3	409	1,198
Short Mountain	5	225	174	143	77	21	645	2	20	30	174	131	3	360	1,005
Totals	112	5,413	1,779	2,582	802	209	10,981	47	315	586	3,478	2,790	80	7,276	18,257

*Coal from Big Mountain, Peerless, Henry Clay and Sterling is all prepared at the Henry Clay breaker.

TABLE IV—*List of Fatal Accidents occurring in the mines of the Sixth Anthracite District for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON INJURED.	Occupation.	Age.	Married or single.	No. of orphans.	Name of colliery.	Location—County.	Date of investigation.	Nature and cause of accident in brief.
Jan. 9.	Paul Ondo,	Miner,	28	M.	5	Mt. Carmel,	Northumberland county,	Jan. 10.	Killed by a fall of top coal.
29.	Isaac Wilbert,	"	29	M.	2	Williamstown,	Dauphin county,		Killed by a fall of top rock.
Feb. 10.	Alfred Dando,	"	39	M.	6	"	"		Killed by a fall of top rock.
Mar. 17.	Alex. Grifiski,	Laborer,	45	M.	5	Hickory Swamp,	Northumberland county,		Killed by a fall of slate.
29.	Thos. Scheuren,	Miner,	35	M.	5	Locust Spring,	"		Killed by a fall of top slate.
31.	David Hower,	Laborer,	27	M.	1	Logan,	Columbia county,		Killed by explosion of a steam boiler.
May 1.	James Townsend,	Loader,	28	S.		Enterprise,	Northumberland county,		Killed by being crushed between mine wagon and gangway timber.
3.	Julies Hande,	Miner,	46	M.	6	Merriam,	"		Killed by falling down tender slope.
12.	Felix Baughman,	Laborer,	25	S.		Neilson,	"		Killed by a collar falling on him while assisting to put up timber on turnout.
24.	John Ambrosi,	Miner,	28	M.	1	Big Mountain,	"		Killed by a fall of top slate.
26.	George Kuzar,	"	25	S.		Burnside,	"		Killed by falling down the breast manway.
27.	Henry Weikel,	"	22	M.	1	Pennsylvania,	"		Killed by falling down the breast manway.
29.	Lewis Holwig,	"	27	W.	3	Williamstown,	Dauphin county,		Killed by a fall of slate.
30.	Moses Smith,	Door boy,	15	S.		Logan,	Columbia county,		Fatally injured May 23 by being crushed between mine wagon and rib of gangway; died May 30.
June 25.	John Cavanaugh,	Miner,	25	M.	1	Locust Spring,	Northumberland county,		Killed by a fall of top coal.
27.	Frank Buggy,	Tip boy,	16	S.		Williamstown,	Dauphin county,		Fatally injured by mine wagons June 25.
July 2.	Evans Harris,	"	31	M.	3	Sterling,	"		Fatally injured by a shot going off which he thought had exploded.
11.	John Halick,	Laborer,	18	S.		Short Mountain,	"		Killed by being run over by mine cars.
22.	Jos. Lipinski,	Miner,	24	M.		Logan,	Columbia county,		Killed by a fall of top coal.
25.	Robt. Lipsit,	Laborer,	25	M.	2	Bear Valley,	Northumberland county,		Killed by being crushed between mine wagon and chute.
26.	Peter Kelley,	Miner,	25	S.		Merriam,	"		Fatally injured July 26 by a fall of top coal; died July 31.
31.	Alex. Muir,	Driver,	16	S.		Big Mountain,	"		Killed by being crushed between mine wagon and rib.
Aug. 6.	Wm. Noon,	"				Tunnel,	Schuylkill county,		Fatally injured June 25 by being kicked by a mule.
21.	John Ryan,	Miner,	46	S.		Bear Valley,	Northumberland county,		Fatally injured by a fall of coal.
22.	Mich. Hoey,	"	30	S.		Monitor,	"		Fatally injured July 27 by a fall of coal.
Sept. 1.	Dank Dubcek,	"	40	M.	5	Big Mountain,	"		Fatally injured August 27; crushed between mine wagon and chute.
13.	Chas Trebold,					Locust Spring,	"		Fatally injured September 2 by falling in breaker.

	18,	Jas. F. Bettinger,	Loco. engineer,	32	. .	. .	Short Mountain,	Dauphin county,	. . . . .	Fatally injured September 16; run over by mine locomotive.
	23,	John Bacha,	Miner,	57	M.	5	North Franklin,	Northumberland county,	. . . . .	Killed by a fall of coal.
	27,	E. Komiskie,	"	. .	M.	3	Reliance,	" "	. . . . .	Fatally injured September 17 by a fall of coal.
Oct.	5,	Chas. Phillips,	Driver,	16	S.	. .	Sterling,	" "	. . . . .	Fatally injured September 30 by an explosion of gas.
	15,	John McAndrew,	Door boy,	14	S.	. .	Logan,	Columbia county,	. . . . .	Killed by being struck by a piece of coal flying from shaft.
	30,	August Biroski,	Laborer,	. .	. .	. .	Alaska,	Northumberland county,	. . . . .	Fatally injured internally on October 27 while pushing a wagon.
Nov.	1,	George Adams,	Repairman,	26	S.	. .	"	" "	. . . . .	Killed by a fall of top slate.
	22,	John Cova,	Driver,	16	S.	. .	Bear Valley,	" "	. . . . .	Killed by being run over by mine wagons.
Dec.	18,	Anthony Lutiskie,	Loader,	25	S.	. .	Big Mountain,	" "	. . . . .	Killed by being run over by mine wagons.
	22,	Danl. Rhodman,	Laborer,	16	S.	. .	Burnside,	" "	. . . . .	Killed by a fall of coal.
	23,	Augustus Wagner,	Miner,	. .	. .	. .	"	" "	. . . . .	Fatally injured December 23 by a fall of coal.
	29,	James B. Jones,	Stable man,	. .	. .	. .	Alaska,	" "	. . . . .	Fatally injured November 22; a mine wagon jumped the track and crushed him against a rib.

TABLE V.—*List of Non Fatal Accidents occurring in the mines of the Sixth Anthracite district for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON INJURED	Occupation.	Age.	Name of colliery.	Location—County.	Nature and cause of accident in brief.
Jan. 7.	John D. Brennan.	Rockman.		Big Mountain.	Northumberland.	Two ribs broken by a fall of rock.
7.	John Pender.	Laborer.		Sterling.	"	Head, body and foot injured by a fall of rock.
9.	Frank Brohman.	Miner.		Cameron.	"	Seriously injured by falling down breast manway.
21.	Peter Miller.	"		Locust Gap.	"	Ribs broken by a fall of rock.
25.	Andrew Yobinski.	"		Luke Fidler.	"	Burned by an explosion of gas.
29.	Adam Bower.	Laborer.		Buck Ridge.	"	Leg broken by a piece of timber falling on it.
Feb. 4.	Martin McCormick.	"		Bast.	Schuylkill.	Back injured by a fall of coal.
15.	Thos. Sosnoski.	Miner.		Luke Fidler.	Northumberland.	Burned by an explosion of gas.
15.	Wm. Bosuskie.	"		"	"	Burned by an explosion of gas.
21.	Patrick Brazzil.	Driver.		Preston No. 2.	Schuylkill.	Leg broken by being crushed by mine wagon
Mar. 7.	Charles Smith.	Carpenter.		Bast.	"	Arm broken; mine sill fell on it.
12.	Andrew Mahes.	Miner.		Centralia.	Columbia.	Injured by a fall of coal.
12.	Michael Clanah.	Laborer.		"	"	Injured by a fall of coal.
12.	William Sincaviecz.	Miner.		Neilson.	Northumberland.	Ribs broken by a fall of coal.
13.	Richard Lewis.	"	55	Williamstown.	Dauphin.	Ankle dislocated and otherwise badly injured by a fall of rock
13.	John Uhler.	"	38	"	"	Knee dislocated by a fall of rock.
19.	Thos. Rooney.	"		Neilson.	Northumberland.	Back and hips injured by a fall of rock.
24.	John Sinindniger.	"		Burnside.	"	Leg broken by a fall of coal.
24.	Jacob Gusofski.	"		"	"	Hip dislocated by a fall of coal.
28.	James L. Brennan.	"		Locust Spring.	"	Head and shoulders injured by a fall of coal.
Apr. 8.	Anthony Wygudas.	Laborer.	30	Enterprise.	"	Ankle broken by a fall of coal.
9.	Christ McGinn.	Miner.		Locust Spring.	"	Abdomen injured by being struck by a piece of coal.
12.	Jacob Entressa.	Laborer.	28	Enterprise.	"	Leg broken by a fall of coal.
14.	Thomas Durkin.	Miner.		Big Mine Run.	Schuylkill.	Leg broken by a fall of coal.
15.	Wm. Lewis.	"		Luke Fidler.	Northumberland.	Leg broken by a fall of rock.
16.	Arch Ganisky.	"		Pennsylvania.	"	Seriously injured by a fall of coal.
18.	James McCue.	Fire boss.		Locust Spring.	"	Head and body injured by a fall of coal.
19.	Joseph Oboskie.	Miner.		Bast.	Schuylkill.	Spine injured by falling under a truck.
23.	Anthony Gedrick.	"		Ferndale.	Northumberland.	Slightly burned by explosion of gas.
May 5.	F. Averill.	"		Pennsylvania.	"	Injured by a fall of coal.
5.	John Ostroski.	"		"	"	Slightly burned by an explosion of gas.
5.	Wm. Doleski.	"		"	"	Slightly burned by an explosion of gas.
7.	John Camp.	Jig runner.	14	Bellmore.	Columbia.	Foot crushed by being caught in rollers.
13.	James Gallagher.	Miner.	35	"	"	Leg broken by a fall of coal.
13.	Andrew Vervitski.	Laborer.		Morris Ridge.	"	Shoulder crushed by a fall of coal.
17.	John Novodis.	Miner.		Pennsylvania.	Northumberland.	Double fracture of leg by a fall of rock.
19.	Emery Henger.	"		Burnside.	"	Arm broken; caught between mine car and chute.
29.	John Mesalisky.	"		Pennsylvania.	"	Injured by a premature explosion of powder.

17 MINES.

June	1.	John Conroy,	"		Bast,	Schuylkill,	Eye injured by being struck by a piece of coal.
	5.	Daniel Wirt,	"	27	Williamstown,	Dauphin,	Back and chest injured by a fall of coal.
	11.	F. Moshinsky,	"		Henry Clay,	Northumberland,	Back injured by a fall of coal.
	17.	Howard Beisel,	"		Big Mountain,	"	Ribs fractured by being kicked by a mule.
	23.	Chas. Donbroski,	Laborer,		"	"	Arm broken by fall of top coal.
	24.	Michael Horelen,	Slate picker,		Big Mine Run,	Schuylkill,	Arm broken; fell while crossing track.
	25.	Michael Varga,	Driver,		Hickory Swamp,	Northumberland,	Hand hurt by a fall of coal.
July	5.	James Ferves,	Miner,		Big Mountain,	"	Head and back bruised by a fall of coal.
	5.	Frank Kulchuck,	"		Morris Ridge,	Columbia,	Leg injured by a fall of coal.
	8.	Patrick Kennedy,	Plane runner,		Alaska,	Northumberland,	Hand mashed by being caught between mine wagons.
	9.	David Evans,	Driver,		Tunnel,	Schuylkill,	Hips injured by falling under mine wagons.
	10.	O. F. Snyder,	Laborer,		Short Mountain,	Dauphin,	Knee injured by a fall of rock.
	14.	Hugh Dolan,	"		Monitor,	Northumberland,	Back injured by a fall of slate.
	15.	Joseph Boreski,	Sprager,		Reliance,	"	Leg broken by a fall of slate.
	15.	Jacob Odorizzi,	Miner,		Pennsylvania,	"	Both legs broken and injured internally by a fall of coal.
	21.	Joseph Nasillock,	"		Logan,	Columbia,	Seriously injured by a fall of coal.
	26.	Andrew Bartosock,	"		Corbin,	Northumberland,	Seriously injured by a fall of rock.
	28.	Thomas Measley,	Laborer,		Buck Ridge,	"	Leg broken by falling under mine wagons.
	31.	Michael McGinley,	Miner,		North Ashland,	Columbia,	Skull fractured and bruised about the body by being struck by a mine wagon.
Aug.	6.	Frank Zundat,	"		Morris Ridge,	"	Legs bruised by a fall of coal.
	6.	Jerry Berdeon,	"		"	"	Legs injured by a fall of coal.
	6.	John Schilling,	"		North Ashland,	"	Arm broken by a fall of coal.
	6.	Lewis Miller,	"		Locust Spring,	Northumberland,	Leg and rib broken by a fall of coal.
	8.	Jacob Smith,	Jig boy,		Alaska,	"	Arm broken by being caught by jig belt.
	9.	Thomas Roberts,	Laborer,		Burnside,	"	Arm cut and badly bruised by a car running over it.
	9.	Michael Lilakefski,	Miner,		Hickory Swamp,	"	Severely injured by a fall of coal.
	13.	Wm. Balchuness,	"		Morris Ridge,	Columbia,	Back and leg injured by a fall of coal.
	20.	Oliver Erdman,	Car loader,		Burnside,	Northumberland,	Head injured and finger mashed; a brick fell from breaker and struck him on head, knocking him down between the cars by which his hand was caught and crushed.
	21.	Archie Shope,	Miner,		"	"	Eye injured by being struck with a piece of coal.
	21.	Gabriel Dutrick,	"	45	Short Mountain,	Dauphin,	Back injured by a fall of coal.
	21.	Henry Alvore,	Loader,	18	"	"	Arm broken by falling while pushing mine wagon.
Sept.	1.	Wm. Morgan,	"		Tunnel,	Schuylkill,	Breast bruised by being caught between wagon and chute.
	2.	H. Dimmoyer,	Miner,		Buck Ridge,	Northumberland,	Hand seriously injured by being struck with an axe.
	3.	James Brums,	Loader,		Burnside,	"	Leg badly bruised by being caught between mine wagons.
	4.	Dom Dabesi,	Miner,		Locust Spring,	"	Hands injured by a premature explosion of powder.
	6.	Thomas McLee,	"		Alaska,	"	Ribs broken by a fall of coal.
	6.	Christ Swartenfager,	Driver,		Meriam,	"	Leg broken by a piece of coal falling from wagon.
	8.	Geo. Loxsham,	Miner,		Burnside,	"	Back bruised by a fall of slate.
	16.	Robert Moffet,	"	39	Williamstown,	Dauphin,	Bruised inwardly by being caught between mine wagons.
	17.	Anthony Cox,	Laborer,		Bear Valley,	Northumberland,	Collar bone broken and head cut; fell from a mine wagon
	12.	Peter Elu,	Driver,	16	Short Mountain,	Dauphin,	Arm broken by being caught while spragging wagons.
	18.	P. Domgoski,	Miner,		Luke Fidler,	Northumberland,	Leg bruised by a fall of coal.
	26.	Michael Dando,	Laborer,		Enterprise,	"	Leg broken by a fall of coal.
	30.	John Driscol,	Miner,		Sterling,	"	Arm, shoulder and ribs broken by an explosion of gas.
	30.	Edward Durkin,	"		"	"	Bruised about the body by an explosion of gas.
	30.	John Bamford,	Sprager,		"	"	Cut and bruised by an explosion of gas.
	30.	J. P. O'Garra,	Door boy,		"	"	Body bruised by an explosion of gas.
	30.	James Brennan,	Loader,		"	"	Head and body cut by an explosion of gas.
Oct.	3.	James Goodman,	Rockman,		Preston No. 3,	Schuylkill,	Ribs broken; the air hose blew off the drilling machine and struck him.
	11.	Paul Homack,	Laborer,		Big Mountain,	Northumberland,	Back bruised by a fall of rock.
	13.	Patrick McAndrew,	Miner,		Logan,	Columbia,	Back and head cut by a fall of coal.
	17.	John Colton,	"		Pennsylvania,	Northumberland,	Leg broken by a fall of coal.
	17.	Thomas Bugil,	Door boy,		"	"	Arm broken by being caught between mine wagons.
	18.	Stiney Swatz,	Miner,		Merriam,	"	Body bruised by a fall of coal.

TABLE V– *Continued.*

Date of accident	NAME OF PERSON INJURED	Occupation	Age.	Name of colliery.	Location County.	Nature and cause of accident in brief.
Oct. 30.	Samuel Malinki,	Laborer,		Logan,	Columbia,	Seriously injured by being struck with a bar which he was using.
30.	Anthony Danalavick,	Miner,		Ferndale,	Northumberland,	Burned by an explosion of gas.
30.	Michael Metezatopki,	"		"	"	Burned by an explosion of gas.
Nov. 5.	Samuel Stake,	"		Williamstown,	Dauphin,	Both legs broken by a fall of rock.
7.	Martin Quigley,	Driver,		Tunnel,	Schuylkill,	Stomach bruised by being kicked by a mule.
13.	Wm. Calton,	Loader,		Burnside,	Northumberland,	Ribs broken; struck by a plank.
14.	E. J. Welsh,	Engineer,		Patterson,	"	Arm blown off by a premature explosion of a shot.
15.	Joseph Bobimon,	Driver,		Bear Valley,	"	Arm broken and foot bruised by being crushed between mine wagons and door.
15.	J. A. Garrett,	Laborer,		Monitor,	"	Hips and back bruised; struck by cars.
17.	Peter Roberts,	Loader,		Burnside,	"	Wrist broken by being caught between bumpers while uncoupling wagons.
17.	Levi Miller,	Laborer,		Williamstown,	Dauphin,	Toes mashed by being run over by mine wagon.
18.	Walter Barry,	Driver,		Luke Fidler,	Northumberland,	Leg broken by being caught between wagon and spreader.
19.	John G. Kane,	Miner,		Logan,	Columbia,	Body bruised by a fall of coal.
19.	Tim Mulligan,	Laborer,		"	"	Hip dislocated by a fall of coal.
21.	Wm. Doyle,	Driver,		Locust Gap,	Northumberland,	Ribs broken and back bruised by being struck by a wagon.
24.	F. W. Wallace,	"		Williamstown,	Dauphin,	Arm broken in two places by being caught between mine wagons.
29.	John Hummel,	Miner,		Locust Spring,	Northumberland,	Ribs broken by falling down a breast.
Dec. 2.	John Aronsic,	Tip man,		Henry Clay,	"	Leg broken by being caught between mine wagons.
9.	Wm. Weldon,	Driver,		Merriam,	"	Arm cut off by mine wagon running over him.
12	John Fredina,	Laborer,		Neilson,	"	Arm broken; a dirt wagon got off the track and he was thrown off.
12.	John R. Llewellyn,	Driver,		Hickory Ridge,	"	Leg broken; bumped between mine wagons.
15.	John Duda,	Miner,		Mt. Carmel,	"	Leg broken and head cut by a fall of slate.
16.	Lafayette Davis,	Laborer,		Short Mountain,	Dauphin,	Leg broken by a fall of slate.
17.	John A Moyer,	Oiler,		"	"	Toes crushed by wagons running over them.
23.	Edward Casey,	Starter,		Tunnel,		Foot crushed by being caught between the side of chute and a piece of slate.
23.	Wm. H. Morgan,	Repairman,		Short Mountain,	Dauphin,	Collar bone broken by a fall of slate.
24.	George Davis,	Tip man,		Henry Clay,	Northumberland,	Injured internally by being caught under mine wagons.
29.	Thomas Cane,	Sprager,		Sterling,	"	Arm and wrist broken by falling under loaded mine wagon
31.	John Noble,	Miner,		Locust Spring,	"	Shoulder bone broken by a prop falling on him.

SEVENTH ANTHRACITE DISTRICT.

(SCHUYLKILL AND CARBON COUNTIES).

OFFICE OF THE INSPECTOR OF MINES,
POTTSVILLE, *March 3, 1891.*

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor herewith of presenting my sixteenth annual report as inspector of coal mines for the Seventh Anthracite district for the year 1890.

The production of coal for the year 1890 was 2,579,160 as against that of the previous year, which was 3,125,435, making a difference of 546,275 tons in the total output for this year. This apparent falling off on the tonnage is not, however, because the collieries produce less coal in the latter year than during the former one, but is due to the fact that the output of the five collieries located in Carbon county and operated by the Lehigh Coal and Navigation Company, was accredited to the Seventh instead of the Fourth district. The adding of that portion of the Fourth district to that of the Seventh, was done at the request of the former inspector of the Fourth district.

There were fifteen accidents causing the death of seventeen persons, leaving eight widows and sixteen orphans; being sixteen fewer fatal accidents than occurred during the year 1889, within the same territory.

There were thirty-eight non-fatal serious accidents reported to us for the year 1890, against sixty-one the previous year.

The report gives the usual tables together with such important information and remarks on the various subjects relating to accidents in and about the mines as is deemed necessary.

SAMUEL GAY.
Inspector of Mines.

TABLE No. 1—*Comparative statement of fatal casualties that occurred during the years 1889 and 1890.*

CAUSE OF ACCIDENTS.	1889.	1890.
Explosions of fire-damp,	2	3
Falls of roof and coal,	6	4
Crushed by mine cars,	6	4
By machinery on the surface,	1	1
By machinery underground,		
Breaking of ropes or chains,		1
Falling down shafts,		1
Falling down slopes,	1	
By blasting material,	4	1
Miscellaneous,	16	2
	36	17

TABLE No. 2—*Showing number of fatal accidents and amount of coal produced per life lost by the different companies and individual firms during the year 1890.*

	Number of total accidents.	Amount of coal produced per life lost.
Philadelphia and Reading Coal and Iron Company,	5	265,095
Lehigh Coal and Navigation Company,	7	83,289
Lehigh Valley Coal Company,	3	2,781
Individual firms,	2	331,160

TABLE No. 3—*Comparative statement of non-fatal casualties during the years 1889 and 1890.*

CAUSE OF ACCIDENTS.	1889.	1890.
Explosions of gas,	25	4
Falls of coal and roof,	16	11
Crushed by mine cars,	15	10
By machinery on the surface,	2	
By machinery underground,	1	
Falling down shafts,		
Falling down slopes,		
Explosions of blasting material,	4	1
Miscellaneous,	5	12
	68	38

TABLE NO. 4—*Showing the quantity of coal shipped and estimated amount used and sold at the mines.*

	1889.	1890.
Quantity of coal shipped by rail,	2,948,524	2,425,308
Estimated amount consumed about the mines,	176,911	153,852
Total production,	3,125,435	2,579,160

TABLE NO. 5—*Showing a comparison between the years 1889 and 1890.*

	1889.	1890.
Number of persons employed,	11,306	9,778
The amount of coal mined per life lost,	86,817	151,715
Ratio of employes per life lost,	313.7	575.176
Number of tons mined per each person seriously injured,	47,355	67,263
Tons of coal produced per each employe,	276.6	261.5

TABLE NO. 5—*Continued.*

	Number of persons employed.	Number of persons killed.	Number of persons employed to each fatal accident.
Philadelphia and Reading Coal and Iron Company,	5,829	5	1,164
Lehigh Coal and Navigation Company,	1,686	7	240.8
Lehigh Valley Coal Company,	492	3	164
Individual firms,	1,780	2	890
	9,778	17	Av. 572

CONDITION OF COLLERIES.

We are pleased to say that, notwithstanding the depressed condition of the anthracite coal trade during the two preceding years, the sanitary condition, as well as the producing capacity of the colleries, has been kept up to even a higher standard than in any preceding year. The output of coal has been largely increased in proportion to the number of fatal and non-fatal casualties.

In that respect the Philadelphia and Reading Coal and Iron Company has made a rather remarkable showing; having produced over 265,-

000 tons of coal per each life lost. This company operates thirteen collieries in this district, giving employment to 5,820 persons, under and above ground, the death rate being 1 in every 1,164. These facts, when it is taken into consideration, that a number of these collieries are very gaseous, much more so than in any other part of the district, would indicate that the management and discipline in an about these collieries had been more than usually rigid.

The individual concerns have also made a showing that is worthy of notice in point of production, having an output of over 300,000 tons to each fatal accident. However, the death rate is much above that shown in the foregoing. The difference being 1 death in 890, as against 1 in 1,164. The latter being about ——— per cent. greater than the former.

The next in order is the Lehigh Coal and Navigation Company, operating five collieries in the district, giving employment to 1,686 persons. The production for the year was 583,029 tons of coal, which cost one life for every 83,289 tons produced, or a death rate of 1 in every 241.8 persons employed.

If the reader should be permitted to take the facts as they present themselves, as a comparison between the different operations, it would strike him forcibly that the dangers to be encountered were unavoidably greater in the latter than in the former concerns referred to. Such a conclusion however, would be a misconception, for it is a matter of fact that fire-damp, one of the most dangerous elements, is much more abundant in the mines of the former than in those of the latter.

We do not wish to convey the idea that the latter mines are free from that dangerous element; far from it. These mines all generate large quantities of gas, notwithstanding not one of the fatal accidents resulted from that source, and only one in consequence of falls of coal and roof, which is another element of danger; in fact falls and fire-damp are the two most treacherous elements of danger the mine workers have to fear; yet but one of the seven fatal accidents are chargeable to those causes, *i. e.*, fire-damp and falls.

Hence the other six fatal casualities are attributed to other causes, viz: recklessness on the part of employes, or a lack of that rigid discipline which is just as indespensable in and about the coal mine, as it is for the safety of those engaged on railroads or upon the sea. That the victims contributed largely to their own destruction there is no question of doubt; as an instance, had one of the unfortunates contemplated taking his own life he could not have taken a better method. This man attempted to cross a shaft on one of the buntons about 800 feet above the bottom while the cage was in motion, and as a natural consequence, the cage in passing him knocked him off the piece of timber down the shaft. In our investigation, we learned that this man had done this several times before, and had been cautioned by the foreman against risking his life in such a reckless manner, but it appears without the desired effect.

Two others were killed on the surface, one of them by being caught in the breaker machinery. In order to reach the place where the accident occurred, the unfortunate could in no other way reach the location of the machinery that crushed him to death, but by crawling on his hands and knees, underneath the platform. Notwithstanding this, the boy, for some purpose unknown, went in under the platform and lost his life.

The other was crushed to death by railroad cars. He and some other employes were running a trip of empty coal cars down a grade, in close proximity to the breaker. From the evidence given at the investigation, it appeared that the cars were being run down the grade at an unusual rare of speed, and according to the testimony of the outside foreman, he had emphatically told the boys that they should always take time and run the cars slowly. Notwithstanding this however, there is no question as to the very high rate of speed the cars were running at, from the fact that after jumping the track the cars ran fully sixty feet, wrecking them, and killing one of the boys.

The third victim was a boy also about 18 years of age. He was employed as night driver at the same colliery, and while in the act of bringing a truck out of the water level tunnel, he evidently fell off, or in letting his feet drag along the track he was caught and dragged off the truck, which passed over him. The boy and his father (who was night-boss) were the only persons in the mine at the time. Shortly after the boy had left with the truck, his father followed him out, and to his horror, when he reached about the place he had directed the boy to stop, he found the dead body of his son lying alongside of the track.

Notwithstanding that the mechanical appliances for the prevention of accidents in and about these collieries are equal to any in the district, and we may venture to say any in the state, yet accidents of the character we have given a brief synopsis of, have been more frequent at some of these collieries then at others. We have stated elsewhere that according to the evidence of the foreman in charge of these collieries that several of the accidents are attributed to disobedience of orders given. However, it is a well-established fact that, as a general rule, that insubordination is the result of lax discipline. It should be understood by those in charge of mines, that as long as it exists, just so long must they expect the same results.

Fatal Casualties Resulting from an Explosion of Gas.

Under the above head we have only the one accident to report, it having caused the death of three persons. That under the circumstances it requires more than a passing notice, inasmuch that, in our judgment, had there been a reasonable amount of care and forethought exhibited, such as the condition of things warranted, it would not have been necessary for us to make any comments, because the source of

danger should have been removed, as far as it was practicable. Had this been done, in our opinion, there would have been three less on the list of fatal casualties.

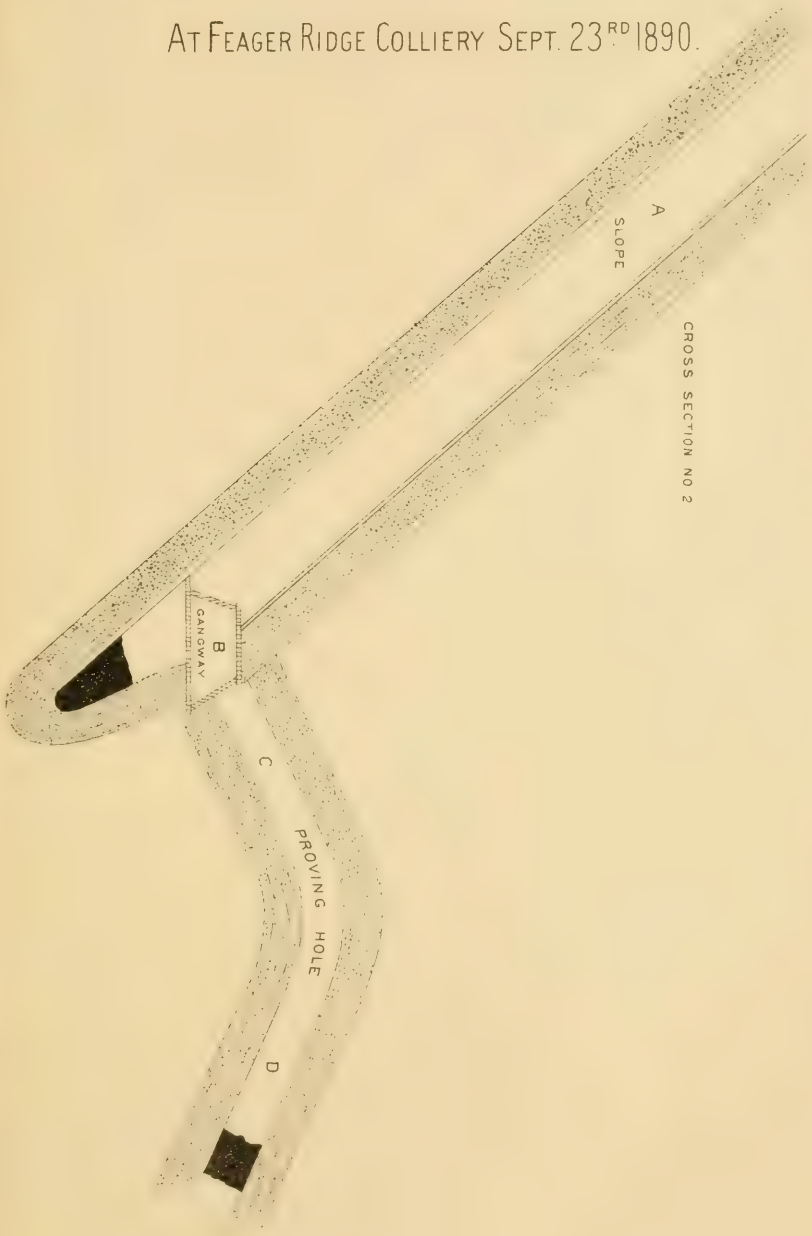
This much-to-be-regretted accident occurred at what is known as the Feger Ridge colliery. Its openings consist of a new slope about 230 yards in length. At that point it reached a local basin or axis, as indicated on the accompanying sketch No. 2. For the purpose of determining the condition and length of the north dip, a proving hole was driven about 25 feet. At that point it reached an anticlinal axis, from the top or apex. The proving hole "D" was continued down on the south dip for a distance of about 50 feet. By this time it was determined to stop the proving hole for the time being, and start the east gangway. It being necessary to drive it about 75 feet in order that the main airway could be started and driven up parallel with the slope about 130 yards, where it would intersect with another section that was already driven and connected with a new ventilating 16 foot fan. Up to this time the ventilating current had been conducted along the slope by brattice; the ventilation being produced by the exhaust steam of the pumping engine.

Previous to the accident a hand fan had been used to ventilate and keep the proving hole "C and D" clear of gas; whether in the interest of economy or safety we are not prepared to say. However, the use of the fan was discontinued, and in place thereof, a door was erected about the bottom of proving hole "C," and a short length of brattice carried part way up the hole. This, as a matter of course, left the upper portion of the opening filled with explosive gas. To this fact the inside foreman in his evidence at the investigation, stated that he had examined the proving hole that morning and found the gas standing within 14 inches of the end of the brattice. He also stated that about an hour before the explosion, he examined the gangway and found it clear of gas, and as a precautionary measure to guard against an accident, he had locked the safety lamps; it being the only light the men were permitted to use. The explosive used was dynamite in place of black powder.

These precautionary measures were commendable as far as they went, but had they adopted means to have kept the proving holes free of standing gas, it would have left fewer grounds for the jury to find a verdict censuring the company. Notwithstanding that the foreman had made an examination of the gangway, about one hour previous to the explosion, and although he failed to discover gas, nevertheless, beyond any question of doubt, there were considerable quantities lodged above the timbers, filling the cavities that had been formed in consequence of the coal breaking down, owing to the vein being unusually large and soft at this point.

Hence, in my opinion, there was such a quantity of gas held in these

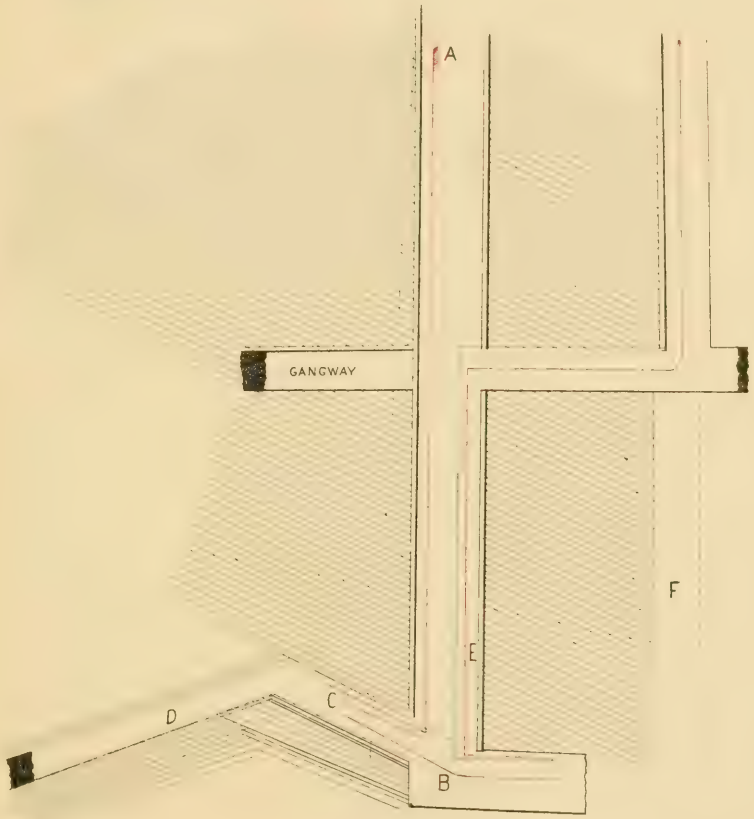
SKETCH To Illustrate Report On Explosion Of Gas That Occurred At Feager Ridge Colliery Sept. 23rd 1890.



SKETCH To Illustrate Report On Explosion Of Gas That Occurred At Feager Ridge Colliery Sept. 23rd 1890.

HORIZONTAL SECTION

No 1.



A A *Slope*
B B *Gangway*
C C *Proving Hole on North Dip*
D D *Continuation on South Dip*
E *Return air way*
F *Proposed airway to be driven*
Blue line Represents air Brattice
Red line Indicates the Course of air current

pockets that when it became ignited, the flame expanded quite sufficiently to reach and ignite the gas standing in the proving holes "C and D."

These openings generated considerable quantities of gas, and it is very probable that from the time the foreman made his examination until the men were ready to fire the shot, the volume of gas may have increased sufficient to have filled the top part of the gangway down below the collars.

An increase may have resulted from one of three causes:

First. An outburst may have taken place; however, I am not inclined to that opinion at this time. For this reason, the foreman stated that when he left the men were engaged in drilling a hole, hence it is hardly probable that an outburst took place until the face had been newly broken by the shot, which, in my opinion, fired the gas causing the explosion.

Second. Had the steam pump been stopped or even its speed slackened it would have affected the air-current.

Third. If the unfortunate men after lighting the shot or before, left the door "E" open, proving hole "C" may have filled with gas down to the gangway. The latter appeared from our investigation of the place, after the explosion, to have been the case.

The unfortunate men themselves knowing, as they did, that there was large openings above the timber, and that these openings were filled with gas, and being experienced miners, they also knew that there was more or less danger of an explosion from that source, although the gangway may have been free from any dangerous body of gas, as far as they could ascertain with a safety lamp. Their long experience which they had in fire mines, must have taught them that although they could not reach those secluded points above the timbers, there was great danger that the flame thrown off from a shot might ignite the gas; therefore, it is rather strange that the three unfortunates should have remained at the bottom of the slope in close proximity to the seat of danger when by retreating 25 yards further up the slope the calamity may have been averted.

IMPROVEMENTS.

The Lehigh Valley Coal Company is still pushing its developements ahead with considerable vigor. Its new breaker at the Blackwood colliery was completed about the latter part of September, and a small amount of coal shipped therefrom during the last three months.

The old York Farm mine has been relieved of water after about one year's work repairing old works and pumping out the water. New airways have been driven and a new 21-foot ventilating fan has been erected. We understand that it is the intention of the officials to sink the old slope 300 feet deeper. When completed the total length of the slope will be 1,530 feet.

The Philadelphia and Reading Coal and Iron Company completed their Good Spring, Richardson and Pine Forest breakers during the latter part of the year. However, owing to the late date at which the improvements were finished, the amount of coal shipped was comparatively small.

The Lytle Coal company (composed of Scranton gentlemen) is now engaged in opening up the Wolf Creek and Forestville property lately purchased by J. Stickney & Co. However, before there can be a very large production of coal, a very large area of the property that has already been worked out and is now filled with water, will have to be pumped out.

Another party of Scranton gentlemen (known as the Silverton Coal Company), have also commenced opening the old Salem colliery, south of Llewellyn, which is located in the southern Schuylkill basin. These old workings are also filled with water; however the quantity is comparatively small when compared with that of the first mentioned one.

The examination of applicants for certificates of qualification for mine foreman was held in Pottsville, June 19, 1890.

The following were recommended for certificates:

Edwin Gwilliam, Lansford, and Jacob Crowe, Donaldson.

TABLE I—*Showing location of collieries in the Seventh Anthracite District.*

NAME OF COLLIERY.	Name of operator.	Location County.	Name of superintendent.	Postoffice address.
Middle Creek	Philadelphia and Reading Coal and Iron Co.	Schuylkill county	R. C. Luther	Pottsville.
Phœnix Park No. 3	" " "	"	"	"
Thomaston	" " "	"	"	"
Otto	" " "	"	"	"
Eagle	" " "	"	"	"
Glendower	" " "	"	"	"
Beachwood	" " "	"	"	"
Richardson	" " "	"	"	"
Brookside	" " "	"	"	"
Eagle Hill	" " "	"	"	"
East Franklin	" " "	"	"	"
Pine Forest	" " "	"	"	"
Good Spring	" " "	"	"	"
Silver Creek Shaft	" " "	"	"	"
Old Lincoln	" " "	"	"	"
Middle Lehigh	Middle Lehigh Coal Company	"	T. D. Jones	New Boston.
Morea	Dodson Coal Company	"	Daniel Thomas	Morea.
New Lincoln	Miller, Graff & Co.	"	D. J. Lewis	Tremont.
Flowery Field	Flowery Field Coal Company	"	Pilot Orme	St. Clair.
West Lehigh	Dungleburger & Co.	"	Mathew Kempt	Tamaqua.
Ellsworth	Davis Bros.	"	John Davis	New Castle.
Oak Hill	Leisenring & Co.	"	Wm. Swenk	Minersville.
Schuylkill Valley	Tyler & McTurk	"	John Pennman	St. Clair.
Reserve	Denning Bros.	"	Wm. Dennings	"
East Lehigh	Michell & Shepp	"	Jos. Mitchell	Tamaqua.
Herbine	J. K. Segfried	"	J. K. Segfried	
Hooker	Guld & Penman	"	George Spencer	Pottsville.
Chamberlin	Thompson & Hiatt	"	Ed. Thompson	St. Clair.
York Farm	L. V. Coal Company	"	Frank Day	Pottsville.
Blackwood	" "	"	"	"
Feager Ridge	" "	"	"	"
Palmer Vein	Abandoned	"	Wm. D. Zehner	Lansford, Carbon county.
Kaska William	Lehigh Coal and Navigation Company	"	"	" "
Lehigh No. 10	" " "	"	"	" "
Lehigh No. 8	" " "	"	"	" "
Lehigh No. 12	" " "	"	"	" "
Lehigh No. 11	" " "	"	"	" "
Greenwood No. 13	Thomas J. Oliver	"	Thomas J. Oliver	Tamaqua.

TABLE II—*Gives the total number of tons of coal mined in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Seventh Anthracite District for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location—Schuylkill county.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number pounds dynamite used.
Middle Creek Shaft	Middle Creek	51,816	138	235			1,400	20	45		4,500
Phœnix Park No. 3	Phœnix Park	41,849	198	227			1,545	14	18		2,500
Thomaston	Thomaston	81,020	190	465			725	40	66		6,175
Otto	Branchdale	113,259	217	693	1		1,500	38	63		10,400
Glendower	Taylorsville	76,352	167	585			1,890	20	53		5,000
Beachwood	Mount Laffee	66,012	171	394			1,150	20	29		350
Richardson	Glen Carbon	13,439	50	336			612	29	18		3,550
Brookside	Tower City	340,642	283	812	1		3,600	56	110	2	3,100
East Franklin	Tremont	34,481	163	226	1		480	8	16		1,650
Pine Forest	St. Clair	9,659	39	167			700	13	12		400
Good Spring	Ioulett	54,000	260	359			1,825	16	18		2,505
Silver Creek Shaft	Silver Creek			69			200	6	4		6,300
Old Lincoln	Lorberry	182,791	219	648	2		6,025	36	71		6,850
Eagle Hill	Eagle Hill	167,093	227	674			1,735	32	65		10,200
Lehigh Coal and Navigation No. 10	Coaldale	179,899	256	482	1		1,740	36	77	1	
Lehigh Coal and Navigation No. 8	"	160,889	245	321	1		240	37	65		
Lehigh Coal and Navigation No. 12	"	40,494	116	197			840	16	35		
Lehigh Coal and Navigation No. 11	"	111,374	203	420	3		960	19	48	2	
Kaska William	Middleport	57,372	135	266	2		583	17	36	1	
Palmer Vein (abandoned).											
Middle Lehigh	New Boston	160,661	205	447			4,379	53	64		
Morea	"	178,153	236	394			3,950	24	34		
New Lincoln (abandoned)	Ioulett	67,032	224	170			550	24			
Greenwood No. 13	Tamaqua	31,129	232	87			229	2	15		
Flowery Field (idle)	Wadesville										
West Lehigh	Tamaqua	12,233	147	47			110		6	1	
Ellsworth	New Castle	19,093	283	44			140	4			
Oak Hill	Minersville	49,447	204	139			1,145	20	10		
Schuylkill Valley	New Castle	12,645	240	84			240	2	4		
Reserve	Wadesville	5,238	240	21			200	2	2		

East Lehigh	Tamaqua	5,341	214	21			125	1	4		
Herbine	Forestville	25,660	215	100	1		550	6	11		
Chamberlin	St. Clair	16,699	200	87			375	4	2		
Hooker	"	16,699	203	82	1		305	4	7	1	
Peach Orchard	Wadesville	3,403		28							
				25							
Feager Ridge (sinking a new slope)	Newtown			25							
Blackwood	Blackwood	8,343	53	379			1,769	11	22	2	
York Farm	Pottsville		88	88				2			
Ketchline	Thomaston	6,073	30	30							
Eagle	St. Clair	3,517	15	15							
Totals		2,425,308	*180½	9,778	17	38	41,821	874	908		
Estimated amount used and sold at the mines		153,852									
Total amount produced		2,579,160									

* Average number of days worked.

TABLE III.—*Showing the number of each class of employes at each colliery in the Seventh Anthracite District during the year 1890.*

NAMES OF COLLIERIES.	NAMES OF PERSONS EMPLOYED INSIDE.							NAMES OF PERSONS EMPLOYED OUTSIDE.							Grand total inside and outside.
	Inside foremen.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All other company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Lehigh Coal and Navigation Company.															
Colliery No. 10	1	139	22	76	23	15	276	1	...	18	108	72	...	206	482
Colliery No. 8	1	108	8	59	15	8	199	1	8	16	45	52	...	122	321
Colliery No. 11	2	119	23	72	19	10	245	1	6	15	91	62	...	175	420
Colliery No. 12	1	68	11	29	13	4	126	1	2	9	43	16	...	71	197
Kaska William	1	62	14	43	19	3	142	1	5	16	66	36	...	124	266
Individual Collieries.															
New Boston	2	134	62	23	39	11	271	1	9	21	82	54	9	176	447
Morea	1	97	24	36	16	7	181	1	8	12	144	44	4	213	394
New Lincoln	1	29	...	28	1	4	62	...	14	...	69	24	2	62	173
Greenwood 13	1	28	11	4	...	...	44	1	3	...	26	14	...	44	88
West Lehigh	1	12	...	1	...	...	19	...	7	...	14	...	...	47	...
Ellsworth	1	14	...	8	3	1	26	...	2	...	6	10	...	18	44
Oak Hill	1	60	...	14	3	...	77	1	10	...	37	15	2	64	142
Schuylkill Valley	...	20	...	8	...	...	38	...	2	...	10	6	...	...	84
Reserve	...	7	...	4	...	...	11	...	...	...	...	...	...	10	21
East Lehigh	...	7	...	2	...	...	9	...	...	...	...	...	...	10	21
Herbine	1	40	...	14	3	...	58	...	7	14	22	...	...	43	100
Chamberlin	...	32	...	19	...	4	60	...	2	2	19	6	...	27	87
Hooker	...	37	13	...	4	...	54	...	7	...	13	8	...	28	82
Blackwood	4	115	56	18	13	1	207	1	13	6	78	70	4	172	379
York Farm	...	...	...	...	...	...	...	...	...	...	...	...	...	...	88
Feager Ridge	...	...	...	...	...	...	...	...	...	...	...	...	...	...	25
Kelchline	...	...	...	...	...	...	...	...	...	...	...	...	...	...	58
Eagle	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20
Orchard Vein	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20
Flowery Field	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6
	19	1,128	244	458	176	68	2,105	10	117	130	773	489	21	1,312	3,956

Operated by the Philadelphia and Reading Coal and Iron Company.

Middle Creek shaft	6	53	33	24	9	6	131	1	4	14	44	39	2	104	235
Phœnix Park No. 3	3	70	13	47	4	6	143	1	9	9	23	41	1	84	227
Thomaston	6	113	16	78	20	3	236	2	24	21	93	87	2	229	465
Otto	7	238	36	134	33	12	460	1	18	16	107	89	2	233	685
Eagle	5	201	77	71	19	8	381	1	5	17	85	95	1	204	586
Glendower	4	163	51	59	17	15	309	1	5	9	36	53	1	85	394
Beechwood	2	57	18	12	2	12	103	1	7	15	36	73	1	133	236
Richardson	5	183	148	177	44	6	563	2	10	24	103	108	2	249	812
Brookside	7	165	63	150	27	19	431	1	25	16	129	70	2	243	674
Eagle Hill	2	60	25	12	9	3	111	1	16	5	44	48	1	115	226
East Franklin	2	34	18	7	4	1	66	1	57	5	30	38		101	197
Pine Forest	2	100	74	31	8	13	238	2	11	8	45	54	6	121	359
Good Spring	1	1	35				36	1	3	4		25		33	69
Silver Creek shaft	2	241	65	120	36	4	468	1	17	13	78	70	1	180	648
Old Lincoln															
Total	53	1,690	672	922	232	108	3,676	17	211	176	853	870	17	2,144	5,820
Total number of employés															9,778

TABLE IV.—*List of Fatal Accidents occurring in the mines of the Seventh Anthracite District for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON INJURED.	Age.	Married.	No. of children.	Name of colliery.	Location—Schuylkill county.	Nature and cause of accident in brief.
Jan. 4,	Hugh Dougherty,	22	. . .	. .	Kaska William, . .	Middleport, ...	Killed by a rush of coal and rock in a battery at the bottom of an old breast.
Feb. 13,	George Ellis,	26	Yes,	1	No. 8 shaft, ...	Coal Dale, ...	Killed by falling down the shaft, caused by his attempting to cross the shaft on one of the buntons.
15,	William Davis,	36	Yes,	3	No. 10 colliery, . . .	Coal Dale, ...	Killed by the explosion of a shot that he supposed had missed fire.
April 3,	Morris Wise,	24	. . .	. .	Brookside, ...	Tower City, ...	Died from lock-jaw resulting from an injured finger.
May 15,	Thomas Brenan,	. .	Yes,	6	Herbine, ...	Forrestville, ...	Killed by a fall of coal.
June 23,	Harry Shutt,	17	. . .	. .	Old Lincoln, ...	Lorberry, ...	Killed on the dirt bank by being struck by a dirt car.
Sept. 23,	Thomas Ward,	45	Yes,	. .			
23,	James Lewis,	35	Yes,	1	Feager Ridge, . . .	Newtown, ...	Killed by an explosion of gas.
23,	Albert Miller,	22	. . .	. .			
July 25,	Thomas Jones,	16	. . .	. .	East Franklin, . . .	Tremont, ...	Killed by being crushed between car and gangway timber.
Sept. 29,	John Penglase,	18	. . .	. .	No. 11, ...	Coal Dale, ...	Killed by being caught in cog gearing under the platform on breaker.
Oct. 18,	William Lane,	18	. . .	. .	No. 11, ...	" "	Killed by being crushed by railroad cars.
29,	Michael Gallagher,	. .	Yes,	. .	Otto, ...	Branch Dale, ...	Suffocated by an outburst of gas.
Nov. 6,	Ruben Felly,	. .	. . .	. .	Old Lincoln, ...	Lorberry, ...	Killed by a fall of slate.
14,	Christ Olmar,	28	Yes,	2	Hooker, ...	St. Clair, ...	Killed; a swivel head broke off on hoisting rope, letting loaded car run down the slope crushing him between car and gangway timbers.
Dec. 2,	William Daley,	18	. . .	. .	No. 11, ...	Coal Dale, ...	Killed by being run over by a mine car that he was bringing out of the tunnel and is supposed to have fallen off whilst riding out.
5,	James Fisher,	65	Yes,	3	Kaska William, . .	Middleport, ...	Killed by a fall of rock in a breast in which he was engaged in taking out a pillar.

TABLE V—*List of Non-Fatal accidents occurring in the mines of the Seventh Anthracite District for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON INJURED.	Name of colliery.	Location—Schuylkill county.	Nature and cause of accident in brief.
Jan. 9,	Wilson Knarr,	Brookside,	Tower City,	Back bruised by a fall of slate.
Feb. 25,	Chas. White,	Morea,	Morea City,	Back injured.
Mar. 24,	Ash Wheeler,	New Boston,	New Boston,	Scalded severely by a boiler explosion.
2,	Chas. Shawlan,	Brookside,	Tower City,	Back and head injured; fell under a car.
8,	Wm. Fishburn,	Blackwood,	Blackwood,	Thigh and wrist broken by falling under a car that was being drawn by a locomotive.
9,	E. Ricket,	Oak Hill,	Minersville,	Foot injured by being caught under a car.
Apr. 17,	Patrick Fox,	Otto,	Branchdale,	Head injured; a car jumped the track, squeezing his head between car and rock.
22,	James Nunemacher,	Good Spring,	Good Spring,	Injured about the head by falling whilst attempting to sprag a car.
May 22,	Wm. Meyers,	Richardson,	Glen Carbon,	Leg and back injured by being struck by a rope that broke.
29,	Joseph Welsh,	"	"	Jaw broken by being struck by a slope rope that broke
June 3,	Patrick Gibbin,	Eagle Hill,	Eagle Hill,	Shoulder and hip dislocated by a fall of coal.
7,	Henry Bretz,	Middle Creek shaft,	Middle Creek,	Injured about the body by being caught by the cage at the bottom of the shaft.
14,	George Brestler,	Brookside,	Tower City,	Rib broken by being struck by a piece of slate.
July 10,	Michael Broop,	Morea,	Morea,	Leg broken by falling under a rock dumper.
19,	Michael Brenan,	Middle Creek shaft,	Middle Creek,	Face and hands burned by an explosion of gas.
25,	Thomas Brenan,	York Farm,	Pottsville,	Foot injured by a car running over it.
31,	James McGettigan,	Eagle Hill,	Eagle Hill,	Injured about the head by being struck by a piece of coal that rolled down the slope.
Aug. 19,	Iskoan Pusko,	Morea,	Morea,	Injured by being caught between the railroad cars under the breaker.
30,	Peter Kendall,	Brookside,	Tower City,	Leg broken by falling off a log wagon.
Sept. 7,	Thomas Herkin,	Glendower,	Taylorsville,	Hand cut by falling on an ax.
7,	Joseph Comarche,	New Boston,	New Boston,	Leg broken; fell while running from a shot.
27,	Michael Conziela,	Thomaston,	Thomaston,	Arm broken and severely injured by a rope breaking on the cable road.
30,	E. Bixler,	Brookside,	Tower City,	Rib broken; a piece of coal flew from a shot.
Oct. 2,	Thomas Farrel,	"	"	Leg broken; caught by a truck on cable road.
11,	Thomas Hughes,	New Boston,	New Boston,	Foot injured by a piece of coal falling on it.
11,	Peter Spanks,	"	"	Foot injured by a piece of coal falling on it.
24,	William McGreavey,	Forrestville,	Forrestville,	Severely injured by a fall of slate.
29,	Wm. Lloyd,	Oak Hill,	Minersville,	Arm broken by being struck by a striking hammer.
29,	George Lathman,	Old Lincoln,	Lorberry,	Bruised about hips and face, and cut by a fall of slate.
Nov. 14	Raymona Lettner,	New Boston,	New Boston,	Injured about the head. A piece of coal fell from platform at the breaker, striking him on the head.
15,	Chas. Frace,	Pine Forrest,	St Clair,	Ribs broken; he fell whilst lifting a scraper chain at the breaker.
Dec. 10,	John Molzova,	York Farm,	Pottsville,	Foot injured by a fall of slate.
13,	Harry Curran,	Beachwood,	Mount Laffe,	Burnt by an explosion of gas.
13,	James Davenport,	"	"	Slightly burnt by an explosion of gas.
22,	Michael Longlon,	Silver Creek shaft,	Silver Creek,	Leg broken by a piece of timber rolling against it.
22,	John Unsting,	New Boston,	New Boston,	Leg broken by being struck by a piece of coal.

BITUMINOUS MINE DISTRICTS.

FIRST BITUMINOUS DISTRICT.

(ALLEGHENY, FAYETTE, GREENE, WASHINGTON AND WESTMORELAND COUNTIES.)

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor to present to you my sixth annual report as inspector of mines of the First Bituminous coal district for the year ending December 31, 1890.

The usual tables will be found embodied in this report; a full explanation of each fatal accident is given as far af possible; there was a total of 92 accidents during the year, 15 of which terminated fatally; this is a total increase of 14 over 1889, but I am gratified to record that the fatal ones are 4 less than for the previous year.

The total production of coal in the district was 3,788,031 tons, being an excess of 1,230,110 tons over the production of 1889. This has been a wonderful year on the Monongahela river for the production of coal, the only drawback of any importance being the scarcity of miners; this caused many of the mines not to be operated to their full capacity. I have given in the body of this report a brief description of the mines of the district and their condition as regards health and safety. It will be noticed that they are in pretty fair condition generally. I am fully determined to get them in the condition in which the law intended that they should be, as far as I am able. While making examinations of the mines I have been informed of a few instances that the air was at times somewhat inadequate owing to the ventilator not being attended to properly, and also of doors being left open unnecessarily long by drivers, and when the parties at fault were admonished they had numerous ex cuses to offer for their carelessness or neglect. The act provides a penalty for violation, but as the fine is so large some hesitation was felt in enforcing the penalty. If the fines were graded according to the offense, and justice of the peace given jurisdiction in all minor offenses, we would have more discipline in and about the mines and the result would be fewer accidents. The attention of the legislature is again called to the dangers arising from natural gas mains being laid over coal mines, and the necessity of a law being enacted compelling the companies owning

them to put their pipes on the surface, and I would further suggest that they be placed on trestles or blocks of sufficient height to allow a current of air to circulate under them. This method would allow the air to sweep away any leakage from the pipes, and when it is necessary for pipes to be laid on tillable ground, bridges or crossings could be made in each field for the passage of teams, etc. During the year I have had considerable trouble with this subject, owing to these mains passing over some three mines in this district, their presence being a standing menace of danger to the men and the mine. The natural gas companies' attention being called to the matter, they invâriably did not (I will except the Carnegie company), or pretended at least, to see no danger by the presence of their pipes over the mine, and ridiculed the idea of even a possibility of gas from their pipes entering the mine, as the gas was specifically lighter than air, and would as a consequence go upward even if the pipes would become broken or displaced by a subsidence of the surface caused by the excavation of the coal beneath them. This belief and the silence of the act of June 30, 1885, in regard to this subject, made it a difficult matter to handle, and the only thing we could do for the safety of the mine and those employed therein, was to stop the mine or part of it. I had occasion to stop part of two mines in the district on account of those lines, and when the gas companies who owned the lines were informed of it they adjusted their pipes somewhat as will be seen by noticing in the body of the report on the Globe and Snowden mines. It is erroneous to think because the specific gravity of natural gas shows it to be a little over half as heavy as air that there is no danger of it descending. There are conditions under which it is placed that must not be overlooked in dealing with it; for under some circumstances its specific gravity is a very small factor in the case, as the following will I think prove. A cubic foot of air weighs .080,977 pounds when the temprature is 32° and the barometric pressure 30 inches, which is equal to 14.72 pounds pressure to the square inch; a cubic foot of natural gas will, under the same conditions, weigh .04421 pounds; this weight of the gas is only under one atmosphere. Now it is evident that the weight per cubic foot will increase as the pressure gets higher. We find that when the pressure is 60 pounds per square inch in the pipes, that it has increased from .04421 to .1768 pounds per cubic foot; this weight is for the gas at the moment of exit from the pipes, and this will be maintained for quite a distance after leaving them, owing to the great velocity with which the gas travels.

In the body of this report will be found drawings, and a letter explaining the same, of an apparatus used by A. N. Humphreys, Esq., mining engineer of the Westmoreland Coal Company, to ascertain whether natural gas will or will not enter a mine when the gas mains are laid as the law provides and the court instructs; and from it it is evident that the stand which has been taken from time to time, and the

fear of danger expressed in regard to those natural gas lines, is the correct one.

As a commission will be appointed to revise the act of June 30, 1885, relating to bituminous coal mines, I will refrain from making any suggestion in this report wherein the above act should be amended.

No doubt the inspector of the fifth district will give an extended report of the "Hill Farm" mine explosion, in which 31 lives were lost. The writer was one of the rescuing party, but unfortunately after being there fourteen days, we were compelled to abandon the work, owingto the mine being on fire and our inability to extinguish it at the time, at this writing (March 2, 1891.) The bodies with the exception of two * have not been recovered.

Photographs of the fan-house of the Snowden mine, and the outside structure of the Buffalo mine, accompany this report.

All of which is respectfully submitted.

HENRY LOUTTIT,
Inspector of Mines.

MONONGAHELA CITY, *March 2, 1891.*

TABLE OF STATISTICS.

Number of mines in district,	74
Mines operated during the year,	61
Tons of coal mined during the year,	3, 788, 041
Tons of coal shipped during the year,	3, 944, 433
Number of persons employed inside,	6, 052
Number of persons employed outside,	580
Total number of persons employed inside and outside,	6, 632
Number of coke ovens in the district,	20
Tons of coke produced during the year,	1, 700
Total number of mules employed,	406
Number of fatal accidents,	15
Number of widows by these casualities,	9
Number of orphans by these casualities,	36
Number of non-fatal accidents,	77
Tons of coal produced per fatal accident,	252, 536
Tons of coal produced per non-fatal accident,	49, 195
Number of persons employed per fatal accident,	442
Number of persons employed per non-fatal accident,	86
Number of kegs of powder used as per operators' report,	7, 722
Average number of days worked during the year,	185

* Recovered the day of the explosion.

FATAL ACCIDENTS.

By fall of coal and slate,	3
By being run over by dilly trip,	1
By fall of slate,	10
By cars,	1
Total,	15

NON-FATAL ACCIDENTS.

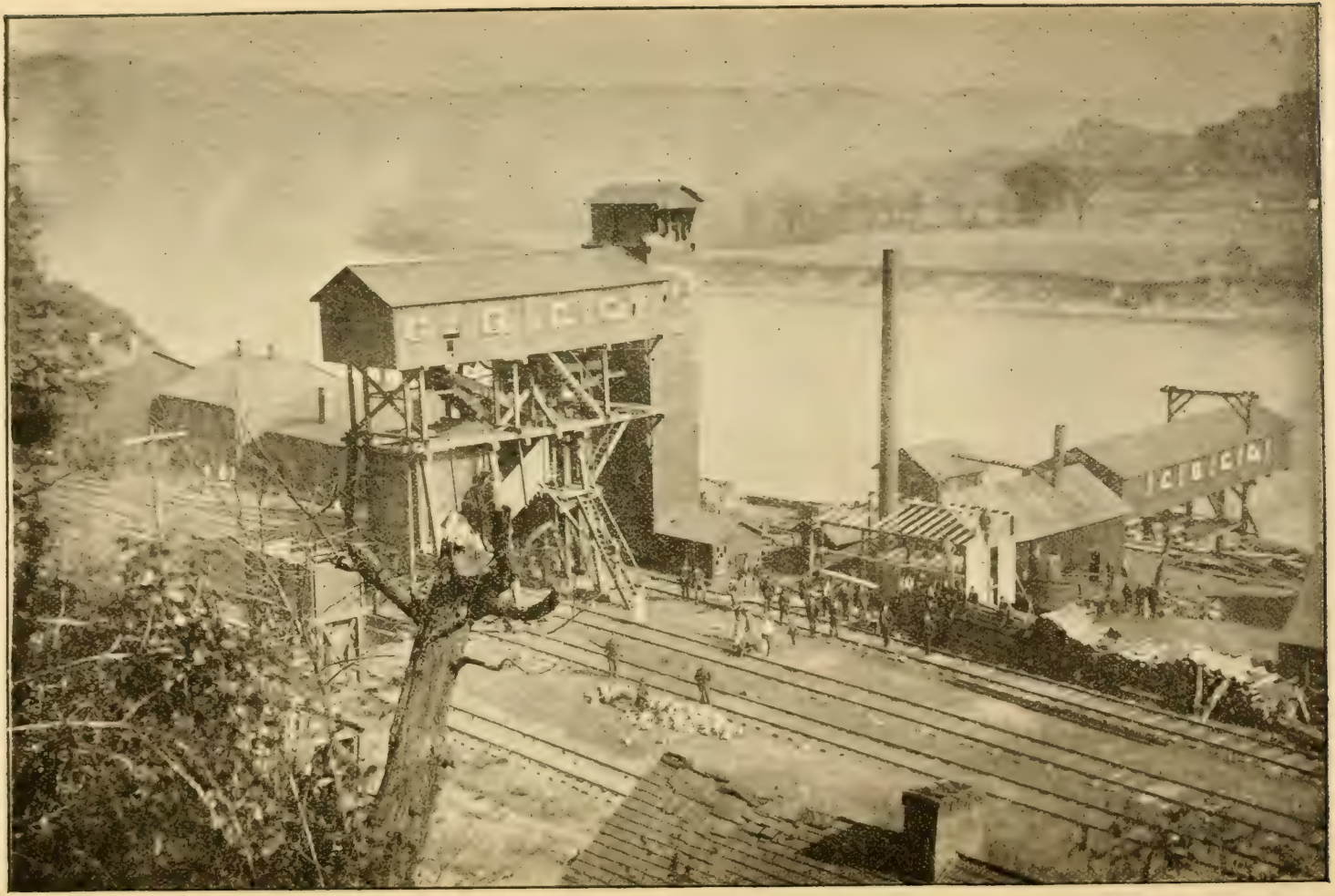
By a fall of slate,	24
By cars,	17
By a fall of coal,	11
By fire-damp,	6
Miscellaneous,	19
Total,	77

MINES LOCATED AND SHIPPING COAL ON THE McKEESPORT AND BELLEVERNON RAILROAD.

Watson mine.—This mine is operated by the Watson Coal Company. During the year the following improvements have been made in and about the mine. They have put in a stationary engine and wire line for hauling purposes, a 12-foot ventilating fan has been erected, houses have been built, store and engine room and a steam pump for drainage has been put in the mine. The ventilation of this mine for some time previous to the erection of the fan was very unsatisfacrory. I called the attention of the company to the matter and they ordered a fan to be erected, but there was some delay in this; from what I could learn, the reason of this delay was that the engine had been ordered from the east and by some mishap it did not arrive as soon as it should have done; but since putting up the fan the air in the mine has given general satisfaction. When this mine was examined on October 24, the inlet air measurement showed 25,200 cubic feet, the condition of the mine fair.

Molsberger mine.—When this mine was examined on October 30, they were employing 55 miners, 5 boys, 3 drivers and 6 day men. The manager here has had great trouble with water and as a consequence, part of their mine had to be stopped on this account, and at the time of my visit they were working in old No. 1 and 2 entries and also No. 7; ventilation in parts of the mine was not satisfactory, owing to it not being distributed properly; the outlet air measurement showed 24,380 cubic feet passing over furnace; places were being driven to increase the air-currents.

Bunola mine.—When this mine was visited on November 19, they were employing 90 miners, 14 boys, 5 drivers and 5 other persons inside. The outlet air measurement showed 32,400 cubic feet passing over the furnace. The entries on either side of the main are ventilated by splits.



Buffalo Mines. First Bituminous District.

Measurements of air was taken on 3, 6 and 8 entries respectively; the general condition of the mine fair.

Lovedale mine.—During the year sidings have been put in at this mine; a railroad tipple has been built and they are now shipping coal over the McKeesport and Bellevernon Railroad. When visited on the 17th of November, the inlet air measurements showed 17,360 cubic feet entering the mine. The general condition of the mine on examination was found fair.

Mines on the Monongahela Division of the P. R. R.

Bowman mine.—Worked 180 days during the year. The mine consists of 3 openings, 2 shafts and a slope; the latter is used for ingress and egress. The coal in height at this mine is from 5 to 6 feet above the bands; the mine is worked both on the double and single entry systems; entries to the left of main are to the dip, making it necessary to use a steam pump for drainage purposes. In connection with this mine they have 6 coke ovens in which part of their slack is used; mine not in operation on my last visit, but I found it in fair condition.

Blythe mine.—This is a new mine and operated by the Blythe Coal Company and worked on the double entry system, and ventilated by a small furnace. Previous to the putting in of this furnace, the ventilation was very unsatisfactory, being ventilated by the natural forces. When visited on October 22, they were employing 55 miners, 2 boys, 2 drivers and 4 other persons; the ventilating currents as shown by the instrument at outlet was moving at the rate of 210 feet per minute, sectional area 43 feet. The general condition of the mine was fair.

Allen mine.—This is a new mine which was opened up during the year and is owned and operated by the Allen Coal Company, and is located between Stockdale and Lucyville stations. A drift opening and ventilated at the present time by the natural forces. On my visit in December they were employing 17 miners, 3 boys and 1 driver. They were sinking a shaft preparatory to putting in a furnace. They were also making preparations to drive an entry for the purpose of using it for a second opening. The ventilation in parts of it require improvement; drainage satisfactory.

Acme mine.—I noticed on examination of this mine that the falls of some rooms that fell in, gives off an odor which closely resembles carbon oil. I tested it with a safety lamp but it would not show itself in the lamp, but I have no doubt it is an inflamnable gas where it is in sufficient quantities. I take it that it is gas from petroleum. Condition of the mine fair.

Buffalo mine.—During the year they have erected a 16-foot fan for ventilating purposes; when examined, November 14, the air current, as regards velocity, was satisfactory, but in some of the entries it was somewhat charged with powder smoke.

At the time of my vist they were driving some 10 entries, so if they

wanted to increase the room work they could do so at any time. They are somewhat troubled with a swamp in this mine, and no less than 8 entries have been troubled with it more or less. The inlet measurements of air showed 32,000 cubic feet of air entering the mine.

Courtney mine.—I visited this mine some ten times during the year. At my last visit they were employing 60 miners, 5 boys, 6 drivers, 1 trapper and 6 other persons. The inlet air measurements showed 10,230 cubic feet entering the mine. The ventilation of this mine at some of my visits has not been satisfactory.

Fidelity mine.—General condition of mine fair. The mine consists of 4 butts and 2 face entries; ventilation produced by a "fire surface" and shaft.

Coal Bluff mine.—This mine, as regards territory, is one of the most extensive in this district. On my last visit I made the following measurements of air, entries 7, 8, 11, 18, 21 and Crocket. The general condition of the present workings of the mine was fair.

Banner mine.—The condition of this mine on my last visit, with the exception of a few places, was fair. They were driving some seven entries for the purpose of keeping their narrow work ahead of their room work as far as possible, so that they would be able to increase their output of coal at any time needed. They employ 176 persons in and about the mine.

Cliff mine.—In operation 100 days during the year. Inlet air measurements showed 14,770 cubic feet. On my examination of this mine I have found it in pretty fair condition.

MINES ON THE PITTSBURGH DIVISION OF THE B. & O. RAILROAD.

Nottingham mine.—This mine was operated some 273 days during the year, and gave employment to 51 miners, 8 boys and 10 other persons. When visited, on the 27th of November, the inlet air measurement showed 13,475 cubic feet passing inlet. Among other improvements made at this mine, is the sinking of a shaft for an upcast; at the bottom of this they have placed a fire-basket which is giving pretty good results. The operator has secured some coal back of the present holding and was at the time of my visit making an entry (part of which had to go through falls) for the purpose of winning this new field of coal. The general condition of this mine as regards ventilation and drainage is fair.

Union Valley mine.—The last examination of this mine was December 8. In parts of the mine the ventilation and drainage was unsatisfactory. The inlet air measurements showed 27,310 cubic feet entering the mine; they had some difficulty in ventilating entry 7, it being single. Unfortunately the air courses connecting it with entry 6 fell in and the only air they could get up to 7 (and this only a short ways) was over the falls and not being a great quantity; as there was only a few persons working on the entry, I suggested that the fan be run faster for the

time being, or until arrangements could be made to air the entry by an air course then being driven from 6. I have since learned though, that they have stopped the entry.

Anderson mine.—The condition of this mine as regards ventilation and drainage in parts of the mine require improvement. Some very extensive improvements are contemplated in the mine by the operator, consisting of a stationary engine and wire line for haulage, also in opening up a new field of coal lately purchased.

Gastonville mine.—During the month of August a natural gas pipe was laid over this mine and the gas turned on, and being of the opinion that it was dangerous to the safety of the mine, and after consulting Inspector Blick of the Seventh district in regard to the matter, I notified the company operating the mine and they called the attention of the gas company in regard to their line. It was then decided that Mr. D. M. Clemson, representing the gas company, Mr. D. W. Van Eman, the coal company, Inspector Blick and the writer, should repair to the mine and make an examination and recommend some improvement for the safety of the mine; after various suggestions were offered, it was concluded to put in brick stoppings for the purpose of cutting off, as far as possible, the workings over which the gas line passed. These stoppings were put in some fifty-five places. In a few of them, doors made of iron were put for the purpose of examination of the isolated places if required. It gives me pleasure to note here that the Carnegie Natural Gas Company, who own the line, have shown a disposition to do everything in their power to prevent any danger to the safety of the mine arising from their line being laid over it. I am also informed that the expense of putting in those stoppings was borne by the Carnegie company.

Snowden mine.—In my report for the year 1889 I noted that natural gas pipes were laid over this mine and the dangers connected with them. On the 8th of January I notified the company to stop some places which were being worked near the gas line, as I was of the opinion that if those places were not stopped the excavated parts would cause a cave in and cause the sinking of the surface which would be followed by the depression of the pipes, thus making it possible to flood the mine with gas from the pipes. The coal company, not being satisfied with my decision, appealed from it under section fourteenth of the act of June 30, 1885, to the court of quarter sessions, to set aside my decision of January 8, and in a re-petition to the court by the writer, a committee was appointed, composed of the following persons: Messrs. W. R. Wilson, James Davis and Alexander Dempster; the latter however resigned, and J. H. McRoberts was appointed in his stead. They examined the mine and the location of the main, but as yet have given no report of their finding, but I have it in an indirect way that they have sustained my decision, and so here the matter rests. In the latter part of the year I was compelled again to take cognizance of the gas line in

another part of the mine; on entries 10 and 11 a few rooms were being driven immediately under it (gas line) and one room having falling in, and breaking the surface within 40 feet of the main. I requested the coal company to stop them, and have an understanding with the gas company in regard to the matter. A consultation was held and it was decided to put brick stoppings in these places similar to them in at Gastonville mine. At this writing I am not informed whether the work has been done yet or not.

MINES OPERATED ON THE MONONGAHELA RIVER.

Globe mine.—When this mine was examined on the 9th of December, the ventilation in parts of it was very unsatisfactory, owing to the use of noxious oils by the drivers and other day hands, which so polluted the air that it was unfit to breathe; I notified the superintendent in regard to the matter, and I have since been informed that he issued an order prohibiting the use of it. In July, while No. 3 room on 12 entry was being worked, they holed into the old workings of the Eclipse mine; the holing was in the barring in and the moment the connection was made, the fire-damp rushed out, and being very dense it extinguished the lamps of the miners who worked in the place; they returned to the mouth of their rooms and re-lighted their lamps and went to examine the hole, when the gas fired on them and by a fortunate circumstance burned quietly at the mouth of the aperture, the gas not having air enough to get back to the old workings and to cause an explosion. I was apprised of it by the management and proceeded to the mine; after examining the place we had a hole drilled through the face of the coal. This was done to find out the thickness of the intervening pillar. The fire-damp being under a heavy pressure came out of the hole made by the drill very rapidly. We closed up the connections and placed a canvass door on the entry and brattice up the room for the purpose of forcing the air to the face of the room preparatory to cutting the coal away, so that we could turn the air on the old works; the operations of the mine were suspended during this period, and only a few persons were with us as aids; it was some three or four days until the gas was out sufficient to stop the place up, which was done by stone stoppings. I have also had some trouble with this mine in regard to natural gas pipes passing over the surface and their workings; some of their rooms being in unsafe condition from this cause, I ordered them stopped until there was something done with the pipes; the attention of the Natural Gas Company was called to the matter and after a great deal of persuasion they were adjusted to a certain extent, in accordance with the suggestions of the supreme court of the state.

Garfield mine.—This mine was only in operation about two months in the early part of the year. In July last they proposed to start up the mine again, and the management requested the writer to examine, and

give it my opinion in regard to the operating of the same; in my examination I found the return air-way nearly closed up with water, and the operator of the mine being only a lessee, he would not go to the expense of blasting the roof down, or getting the water out so to have more room on his return, neither would the company who owned the mine do so, for some reason or other, so that the mine is standing idle at present.

Fayette City mine.—When examined on the 17th of December, the condition of the mine as regards ventilation and drainage was not satisfactory. The mine being on the eastern slope of the Waynesburg anticlinal, the butt entries on the right of main, as a consequence dip, which makes the drainage very difficult to control; owing to this some of the roads were in a very bad condition. The air-current in part of the mine was polluted with smoke from powder blasts, on account of the indiscriminate blasting going on; I requested the management to try and have some regularity in regard to the use of powder. Air measurement at outlet showed 17,760 cubic feet passing over furnace.

Fawcett mine.—When visited on October 29th, the mine as regards ventilation and drainage, was pretty fair. The outlet air measurement showed 20,000 cubic feet passing out. They employ 122 miners, 8 boys, 8 drivers and 13 other persons.

Eclipse and Fulton.—Niether mine has been running during the year.

Canondelet mine.—During the latter part of the year a new company took hold of this mine, and made some repairs in it, but have only produced coal a few weeks. Made no examination since this company has taken hold.

Stone mine.—When examined October 16th, the ventilation and drainage in parts of the mine required improvement; I requested them to increase the ventilation where it was inadequate, and also give some attention to the drainage. I have since received a letter from the mine boss in which he states that the ventilation has been increased in the places complained of; outlet air measurement showed 27,540 cubic feet passing over furnace.

Rock Run mine.—When examined on the 21st of November the general condition of the mine was fair. The coal of this plant is nearly exhausted.

Black Diamond mine.—During the year, a shaft 100 feet in depth has been sunk, a furnace built, length 11 feet, width 5 and height 5; by these improvements the air route has been shortened some 1,000 yards; when we take into consideration the frictional resistance of an air way of this length, with an average area of 37 feet, we soon see that by cutting it off it would be to the advantage of the ventilation of the mine: outlet air measurements 26,640 cubic feet; general condition of mine fair; last examination of mine November 7th.

Catsburg mine.—Examined last, December 26th; the return which, partly crosses a swamp is now closed up with water, which necessitates the bringing the return air down 6 entry and then on the main, which makes it very unsatisfactory; they have a syphon working on the swamp but it has not sufficient capacity to take the water out. I am informed that a larger one will be put in or the roof will be blasted down to make room for the air. The main entry crosses a swamp and to facilitate the haulage the roof was blasted down, ——— feet, this entry being connected by entry 4 to the old Catsburg mine; black-damp from the latter at times shows itself on the main entry, having escaped through the *débris* made from the blasting of the entry roof; under the present conditions it can be adjusted only by an air-current passing this point to keep it from accumulating in dangerous quantities.

Ivil mine.—On my last visit to this mine I found it in fair condition as regards ventilation and drainage; in my annual report for 1889, mention was made in regard to the delay in putting the fan in position, it has since been done and is giving, at the present time, pretty good results and all that is needed is for the person having charge of the inside to properly distribute the air-current.

Jefferson mine.—Number of employes 117. This mine has some five inlets for air, but at my last visit the air was not properly regulated. I suggested to the mine-boss to put regulators on the openings and only leave sufficient air go through them to ventilate each entry according to the number of persons employed and as circumstances would require. I have since been informed that this has been done, and the ventilation materially increased. The Philadelphia Natural Gas Company has a gas main laid over this mine, and some of the mine workings are now being driven towards it; I shall keep myself informed in regard to the matter, and whenever, in my opinion, they get in dangerous proximity to the line, I shall, in the interest of safety, issue a notice to stop them.

Horner & Roberts mines Nos. 3 and 4.—On my last visit to these mines I found them in pretty fair condition as regards ventilation and drainage.

H. D. O'Neil mine.—When examined, October 17th, they were employing 98 miners, 9 boys, 4 drivers and 8 other persons; outlet air measurement showed 25,200 cubic feet passing over the furnace. They were drawing entry stumps on 7, and the air was so dangerously charged with black-damp that I requested the men to withdraw from it until it was ventilated in a proper manner. This mine has two entries, Nos. 2 and 4, which are standing some 60 (according to the plot) feet from the old "Love mine," which is owned by the Hon. James G. Blaine. I wrote in regard to a map of the latter mine but I am informed by the private secretary of Mr. Blaine that they have no map of the works, so I have notified the officials of the H. D. O'Neil mine that if they work Nos. 2 and 4 it will be necessary to keep bore-holes ahead, as per section fifth

of the act of June 30, 1885. There is a large body of water in the old mine and extra precautions are necessary to avoid danger.

Clipper mine.—When examined, October 20, they were opening up a new piece of coal and at the time of my visit some 22 persons were employed in it, while 33 were given work in the old part of the mine. The mine was nearly exhausted at the time of my examination, but I have since learned that the operators have secured more coal and will now increase their output.

Abe Hayes mine.—I have always found this mine in fair condition.

Greenfield mine.—When examined last, the general condition of the mine was fair.

Knob mine.—Number of persons employed, 162; number of days worked during the year, 238. They placed near No. 9 entry on the return a boiler and furnace to generate steam for a pump, which I considered dangerous, on account of the possibility of the smoke from the fire under the boiler getting in the main entry and mixing with the intake air, the intake and return being parallel; taking this view of the matter I requested them to dispense with it which they did. The mine on my last visit, October 6, was in general fair. Inlet air measurement showed 30,600 cubic feet.

Albany mine.—Is located about one mile from Brownsville, Fayette county, Pennsylvania; it is owned by George E. Hogg, Esq., and operated by C. L. Snowden and Frank T. Hogg, E. M., and is known as the firm of Snowden & Hogg; owing to the coal being only 4 feet above an ordinary stage of water it was necessary to open this mine by driving a slope commencing 30 feet above the top of coal to a distance of 270 feet with an average grade of 1 inch in 7; ground was broken for this purpose early in the spring of 1884 with a view of winning 600 acres of coal under the adjoining properties. At a distance of 50 feet from the mouth of the slope, a shaft 8 feet in diameter was sunk to the seam for ventilating purposes; at the bottom of this shaft the main air-course was driven parallel to the main entry; after driving the latter named entry a short distance from the foot of the slope, the lay of the coal or grade appeared to be in favor of the loaded trip, but unfortunately, like many other instances in mining, the favorable part was only of short duration, for after the entry had been driven in the coal a distance of 300 feet it began to dip and continued do so for a distance of 1,200 feet. This point up to the present time is the lowest in the mine, and is 1.7 feet below low water mark. The workings are laid off entirely on the double entry system, each entry being driven by lines or sights, with 60 feet of pillar between each of them. The distance of rooms on all butt entries from center to center is 33.5 feet. The first butt-entry was turned off the right of main entry at distance of 160 yards from mouth of the slope, and is known on the plan as No. 1. The next on the same side and driven parallel to No. 1 was broken off at a distance of 180 yards

from the entrance of the slope and is marked on plan No. 3 entry, as the entries are turned away in pairs or four entries together, viz: Two on the left and two on the right of main entry; the first that are turned away on the left are 170 yards and 190 yards from entrance of the mine; the distance between each block of entries is 160 yards; up to the present the main entry has been cut far enough for 16 entries and not a clay vein or spar has been seen, although other difficulties presented themselves which caused considerable trouble to surmount, first owing to the negligence or lack of discipline or both combined. The entries Nos. 5 and 7, after being driven 1,000 feet, the pillars between these two entries were allowed to be reduced from 60 feet to 35 feet; after the rooms had been broke off and driven up a short distance, the entry pillars indicated a heavy sqeeze or crush; to save the entries, timbers were set along the pillars, and chocks or cribs built at the shoulder where the butt is widening, shots had been taken out of the mouth of the room; this was done for a distance of 14 rooms and appeared to check it for a period of several months, or until the flood of 1888, when, owing to the old workings of the glass works bank, which are fairly extensive and in proximity to the first entries on the right side of main entry, the mine was entirely flooded, this unfortunate circumstance taking place, it at once set Nos, 5 and 7 on the creep and it never ceased until the bottom and roof came together though the coal at the upper end or head of entry was not lost, but since that time has been drawn from No. 1 or the first block of entries; the height of the river at the time of the flood registered at the tipple 41 feet and the lowest part of the mine being below low water mark, with old openings at the river front and these openings connecting with the workings, the consequences can be better imagined than described. Previous to this flood owing to the increased quantity of water the mine was making, a 7x7x12 steam pump and known as the Yough pump had been ordered from Boyts & Porter, of Connellsville, and fortunately arrived in time to be placed in its position when the flood came and buried it; after the river had fallen some, and the water drained to its own level in the mine, a 4-inch pipe with a 3-inch discharge was coupled on the pump, the suction pipe was laid until it was covered with 3 feet of water when the pump was started and worked until this was pumped out; another section of pipe would be put on in like manner until the head of the air-course, the lowest point, was reached. This pump is set near the furnace, the main pipe being laid in the air-course and at every block of entries a "T" was put in and reduced to 2 inches by this arrangement; a trench pipe is coupled and water pumped from any part of the entries or rooms instead of hauling it, until at the present time there is 3,900 feet of 2-inch pipe together with 1,600 feet of 4-inch pipe and it is giving entire satisfaction. This mine, up to August, 1890, was ventilated by furnace power, but owing to the rapid advancement of the workings, together with such a short column of

air that it was deemed necessary to put down an exhaust fan for ventilating purposes. This fan was built at the Vulcan Iron Works, Wilkes-Barre, Pennsylvania, and it is of the Guibal type; it is 14 feet in diameter, 3 feet 10 inches wide and is direct-acting, and up to the present time has given entire satisfaction and possess all the merits that the makers claim for it. The last measurement made by the writer on the return air-course, on the 24th of December, registered 48,000 feet. Speed of fan, 60 revolutions. The steam that supplies the fan engine, and also the two small engines that are used to hoist up the slope, is generated from two double flue boilers, the internal diameter of boilers being 3 feet, and they are 22 feet long. The haulage, with the exception of slope, is done by mule power, though the management contemplates using electricity or endless rope after the spring run is over. Mr. F. T. Hogg, one of the firm, who, being a civil and mining engineer, takes pride in keeping the map of the mine in accordance with section one of the act of June 30, 1885.

Climax mine.—Examined December 24; number of persons employed, 49; general condition of mine workings, fair.

Champion mine.—Examined October 8; cubic feet of air entering the mine, 17,160; number of employes on the date given above, 102 inside, and 7 outside. To properly ventilate this mine at all seasons of the year, it will be necessary to build a large furnace or put in a fan, as the furnace now in use is entirely too small to produce sufficient air when the temperature outside is high.

Caledonia mine.—When visited, on December 19, they were employing 100 miners, 10 boys, 5 drivers, and 9 other persons. General condition of mine, fair.

Tremont.—The ventilation of parts of this mine on my last visit was not satisfactory. I called the attention of the superintendent to the condition of the mine in regard to the ventilation, and he informs me that it will be adjusted and the cause of complaint removed.

American mine.—Number of employes on October 2, 84; velocity of instrument at outlet indicated 350; sectional area 44 square feet. The air-current in parts was somewhat charged with powder smoke, and as a consequence was unsatisfactory.

Camden mine.—The improvements made during the year at this mine consist of a furnace, 26 feet long, 9 feet wide, and 4½ feet above the fire bed; the grate surface is 54 square feet. A Smith & Vale duplex pump has been put in for drainage; the suction pipe is wood (Wychoff patent), 6 inches in diameter and 1,400 feet in length; the pump has a lift of 13 feet; a boiler 6 feet long and 2 feet in diameter, of the Porcupine pattern, is used to generate steam for this pump. Steam power is used here for haulage, working on the tail-rope system, the lines are ⅝ inches in diameter, and are 1½ and 3 miles in length respectively; they haul from 45 to 60 cars each trip; they can make the round trip in about 35 minutes.

On November 20, the outlet air measurements showed 40,000 cubic feet passing over furnace. The general condition of the mine, fair.

Cincinnati mine.—Examined last, October 1st; general condition of mine fair. Inlet air measurement showed 36,000 cubic feet.

Allequippa mine, Nos. 1 and 2.—When examined, November 25, mine No 1 was in fair condition, but in mine No. 2 the ventilation in parts of it was not up to the legal requirements. I gave instructions in regard to the matter, and I am informed by the mine-boss that they have been carried out and that the ventilation is now satisfactory.

Old Eagle.—On my last examination of this mine I found the air currents in parts of it not sufficient, I called the attention of the superintendent to the matter, and they are now having a 20-foot ventilating fan of the Guibal pattern put in, and when it is completed there should be no cause of complaint. Among other improvements now under way is the moving of the compressed air machinery to the back of the hill. The change of location will give them more room at the river and also more at the present site. They have also built a new engine house, 36x60 feet and put in another battery of boilers.

Walton's Upper and Lower mines.—When examined, November 10 and 15 respectively, I found their condition fair.

Robbins mine.—This mine on my last visit was, as regards ventilation, in an unsatisfactory condition, owing to a great amount of blackdamp coming from the old workings. This is an old mine, and it seems as if those who have had charge in former years made no provision for a continued ventilation of the mine, but on the contrary they have withdrawn entry pillars in some entries, thereby cutting off their inlets, and this is what is giving the present manager a great amount of trouble in ventilating the working places.

Hilldale mine.—Number of employes on my last examination, 82; entries on which the air measured, Nos. 4, 5 and 7; quantity of air at outlet, 19,680 cubic feet.

Snow Hill mine.—Examined October 3. The ventilation in parts of it was not up to the legal requirements. They have a furnace here but of late the return air did not go over it, but came into the shaft from behind and the only heat imparted to the air was from the heat of the shaft. Seeing that the air would be materially increased by forcing the return air over the furnace, I requested that this be done. It has been done and the ventilation has been very much improved.

Milesville mine.—On my last examination of this mide I found the ventilation in parts of it required improvement. I called the attention of the management to this and I have since been informed that the air has been increased.

Cedar Hill.—On my last examination of this mine the ventilation and drainage were unsatisfactory. The quantity of coal remaining here to mine is small.

Amity mine.—175 miners, 12 boys, and 13 drivers and 16 other persons are given employment at this mine. A swamp was met with in this mine, which five entries on the right of main one crossed, on one (No. 4) of them it reached a depth of 19 feet. The general shape of swamp is serpentine with a southwest by northeast direction. A water course was driven in this swamp into which all water made by the workings on the right of the main entry is drained. From here it is discharged into Thompson's run.

Stony Hill mine.—Number of employes, 90; number of days in operation during the year, 239. Improvements made at this mine since last report is the grading of track for dilly trips, cost of which was $1,079. On my last visit to this mine the ventilation in parts of it was not satisfactory. I notified the proper parties to have this cause of complaint removed.

Stockdale mine.—When examined, on the 27th of October, the ventilation was very slack in some places. I notified the superintendent in regard to the condition of the mine and he informs me that the cause of complaint has been removed. Inlet air measurement showed 10,150 cubic feet.

Bellevue mine.—This mine was only in operation 75 days during the year. The company that operated the mine got into financial straits during the early part of the year, but near the close they made a compromise with their creditors and commenced to operate again but a strike by the miners coming on stopped them; the mine is now advertised for sale, and I have not been informed who will operate it hereafter.

Umpire mine.—Opened in 1863, employes, 108; general condition of mine, fair; they were driving an entry at this time, and an air course to some coal known as the "Point;" this track is about 366 yards long and 165 broad; the air-course was being driven day and night. The ventilation for these places is natural. The company contemplates the driving entry No. 1 to daylight which, when done, will shorten the air-route nearly a mile, and to a certain extent will prevent the dilly trips from working against the air-current as at present.

Germania mine.—This mine has been lying idle since early spring with the exception of four days during which a new company has operated it; this company has been making improvements inside and outside of the mine; the inside improvements consist of a new furnace and stack and a new pump, and also repairing roads and cleaning up; outside houses repaired.

Woods Run.—Not operated during the year.

IRWIN, PA., *February 20, 1891.*

MR. HENRY LOUTTIT, *Inspector of Mines:*

MY DEAR SIR: In compliance with your request I herewith enclose drawings, which will be readily comprehended, showing experiments tried on the 12th day of last June, at the South Side colliery of the Westmoreland Coal Company, to ascertain whether natural gas will or will not enter a mine when the gas mains are laid as the law provides and court instructs, *i. e.*, "in broken stone from which escape pipes, placed one hundred feet apart, lead to the surface of the ground, the broken stone to be covered with tarred paper and the paper to be covered with clay."

Experiments were tried under conditions essentially similar to those caused by such breaks in gas mains as must invariably result from subsidence of the surface if the strata be broken by the removal of the coal from underneath. In the first experiment tried two 3″ gas pipes were placed end to end in broken stone in a trench, the top sides of the pipes touching, but the undersides being apart a little over one-sixteenth of an inch (this opening being equivalent to a crack extending partly around a pipe of that size), and each pipe being gently inclined toward the opening; or, as they would be if the ground had sunk slightly after the pipes were laid. These pipes were placed by the side of an inlet to an exhaust fan over a ventilating shaft.

Immediately beneath the opening between the pipes and three inches distant from it (the space between being filled with broken stone) was placed at the end of a 3″ gas pipe that lead into the fan inlet and on down vertically through the shaft into the mine, and having a valve on the end. A layer of broken stone ten inches thick was placed over the pipes and was covered with tarred paper. Escape pipes extended from the broken stone to the surface of the ground were placed on each side of the opening between the pipes and three feet distant from it, thus affording the gas the best possible conduit to the surface. Finally, the trench was filled above the tarred paper with well-stamped clay.

After one end of the horizontal pipe was closed with a cap, gas, under a pressure of one and four-tenths pounds per square inch, was admitted to them at the other end, through a half-inch gas pipe. The fan was started and speeded so as to maintain a ventilating pressure equal to a half-inch of water.

To discover whether the gas would pass through the pipe when the valve would be opened in the mine, was an undertaking attended with not a little danger, as the gas might be highly explosive because of an admixture of air from the escape pipes. A safety lamp was used to make the test, and we found but little gas coming through the pipes.

The fan speed was then increased until the water gauge indicated a depression of one inch, the regular ventilating pressure at this mine.

PROJECTED SECTION

Showing

NATURAL GAS ENTERING MINE, FROM OPENING IN PIPES,

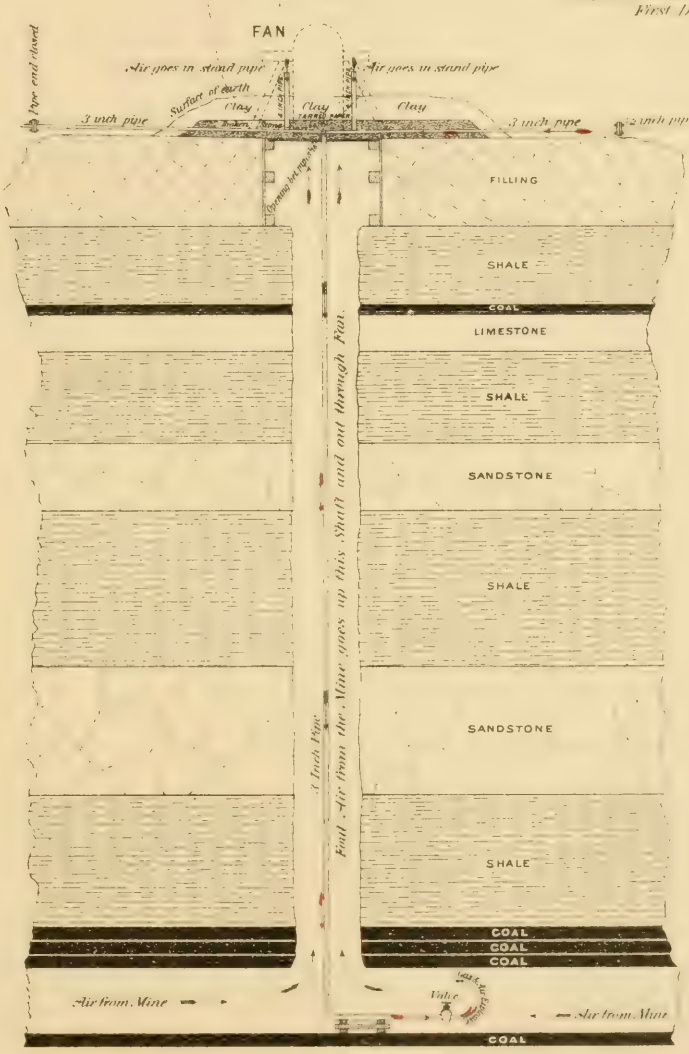
laid in broken stone as required by law.

FIRST EXPERIMENT.

IRWIN, PA JUNE 12TH 1890.

BY A. N HUMPHREYS.

Henry Loutlit.
Inspector of Mines
First District



NOTE Depth from surface to Valve 84 ft
Opening to admit gas to broken stone ¼ of an inch wide.
Pressure of gas in pipe in broken stone 9 lbs per inch.

PROJECTED SECTION

Showing

NATURAL GAS ENTERING MINE, FROM OPENING IN PIPES,

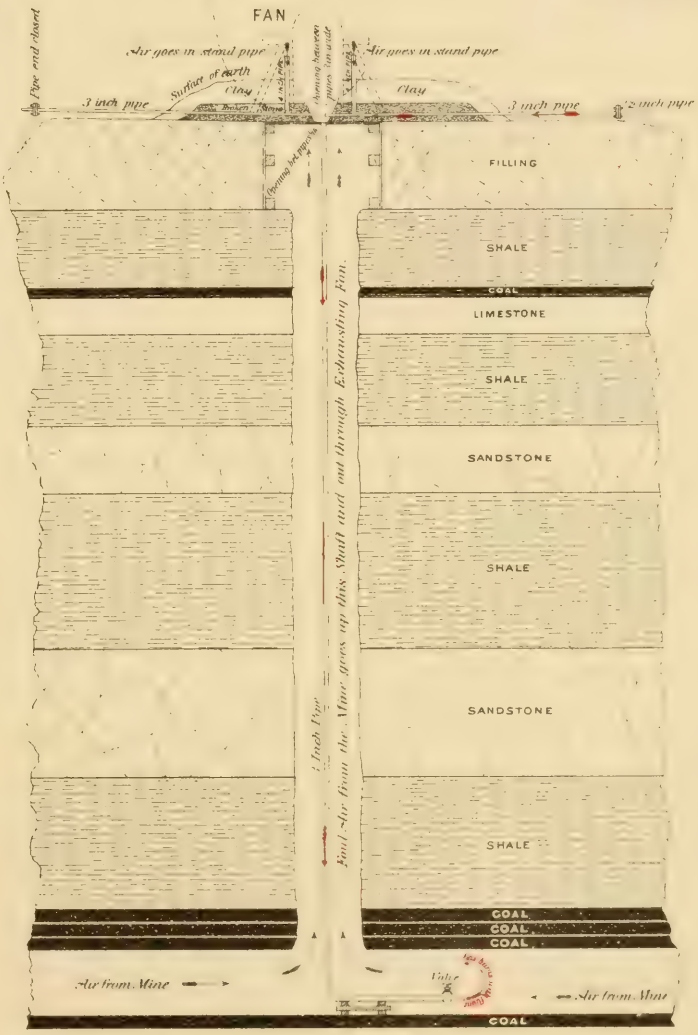
laid in broken stone as required by law.

SECOND EXPERIMENT.

IRWIN, PA JUNE 12TH 1890.

BY A N. HUMPHREYS.

Henry Loutit,
Inspector of Mines
First District



NOTE Depth from surface to Valve 84 ft
Opening to admit gas to Atmosphere 2 inches wide
Pressure of gas in pipe in broken stone 1 lb per inch.

Gas was now found coming through the pipe and in a very explosive form. It would explode within the lamp gauze and put the light out. A miner's lamp of the ordinary kind was fastened on the end of a long stick, and, from a distance, the flame of the lamp brought in contact with the gas issuing from the pipe. The result was an explosion of such violence in the pipe, and about the end of it, that the detonation could be heard through the escape pipes on the surface. This was tried several times. Once the lamp was knocked off the stick by the concussion. During this trial we found that the air continually entered the escape pipes and no gas passed out through them into the atmosphere.

An experiment was then tried to determine whether or not gas would enter the mine from a break in uncovered pipes. The covering was removed from around the pipes at the opening where the gas was to leak, the size of the opening was increased to three inches, and the cap was taken off the end of the pipe to permit the gas to pass off that way if it would. The top end of the vertical pipe was lowered to a position about five inches from the opening between the other two pipes.

The gas was then turned on, the fan being in operation, and, curiously enough, a small quantity of it passed off up through the escape pipes, none went out where the cap was taken off, while in the mine the burning gas flamed up fully four feet above the end of the pipes and would have soon ignited the roof coal had the valve not been closed.

The writer has always contended that gas from a broken main would descend through cracks or breaks in the strata and enter any mine ventilated by furnace or exhaust fan. This has now been conclusively proven.

Not a few engineers insist that because natural gas, or say $C H^4$ is lighter than the atmosphere it must necessarily rise in the air, like a cork from beneath water, forgetting altogether that the gas in the mains is often under two or three hundred pounds pressure to the square inch, and, therefore, is much more weighty than atmospheric air.

However, the gas used in trying these experiments was much lighter than air; yet escaping under pressure as it did, a very trifling quantity was diffused into the atmosphere; and this, through the action of the fan, seemed to be retarded by the air which was drawn or held nearly stationary in place in the openings through the broken stone.

If the buoyancy of the gas used on this occasion did not cause it to rise, how then would gas under several hundred pounds pressure, act when escaping from a broken main into a crack or rent leading through broken strata into a mine with a ventilating current produced by a fan or furnace reducing pressure? I fear this query will only be answered by the total destruction of some large extensive mine, and the loss of very, very many valuable lives.

Yours respectfully,

A. N. Humphreys.

FATAL ACCIDENTS.

John Ward, a miner, aged 70 years, was instantly killed in the Cincinnati mines on February 4th, by falling of coal and slate in room 14, entry 5. The decease was bearing in at the time of the accident and had some five cars bore in. It was the middle shot and had stood since October last, and, as a consequence it was very loose, and it seems that no effort was made by the unfortunate man to secure it, and it only needed a little work to be done at it, when it would fall; this was done by the bearing in which he was doing at the time it did fall; Mr. Robert Craig was working in 12 room on the same entry, and when he heard the fall, he ran to Ward's room and found him covered up, all but his head, with slate and coal; the slate immediately over him was 7 feet long, 2½ feet wide and 10 inches thick.

Benjamin Ferree, a miner, was fatally injured on March 5th, in Ivil mines by a fall of coal and slate. Mr. Ferree had his room undermined in all but a small piece next to the butt side, and had fired the tight shot, and while in the act of bearing the aforesaid piece of butt, the coal and slate fell from the tight side clear up to where he was working, catching him in such a way as to entirely cover him. Mr. John Harrington got to him just about the time the coal and slate fell, and he called for help and got Mr. Ferree out from under the coal and slate. He lived some six hours after being taken home. He leaves a wife and four children to mourn his untimely death.

James E. Montgomery, a miner, aged 60 years, was instantly killed by being run over by the dilly-trip in Catsburg mines on March 13th; this unfortunate man, with his son, were going to work, and when near the mouth of No. 8 entry the son said, "father the trip is coming, get out of the way." The father either did not hear him or wanted to get farther in. It will never be known why he did not stop, as close to this point there was a safety hole, and before he could reach another one the dilly trip was on him; the cars on the trip threw him down, and from the evidence in my investigation must have dragged the body 84 feet; the body was horribly mangled. Inquest held and a verdict of accidental death rendered.

Patrick Sheedy, a miner, aged 46, was instantly killed in Horner & Roberts mine No. 4, March 29; the slate measured 6 feet long, 2⅓ wide, and 10 inches thick; the evidence given by Mr. James Black before the inquest was that he was at the mouth of Sheedy's room for the purpose of going to get his drill which he loaned the deceased; he heard moans and he hurried up to the room and found Sheedy under the slate; from the condition of the room and the position of the body, the deceased must have been shoveling coal from under the slate when it fell on him. An inquest was held and a verdict of accidental death rendered.

Joseph Wier, a miner, aged 30 years and single, was killed in room 1, entry 1, in Bunola mine on Saturday, March 29th, by fall of coal and

slate. Mr. Bird, the driver, gave the deceased a car about 10 o'clock on the day of the accident and told him that he would not load it until Monday. This was the last that any one saw him alive. Weir lived out in the country where he "kept batch," and no person missed him until the driver went in for this car on Monday morning and found his bucket and coat, and his car not loaded; the driver knew that there was something wrong, as the deceased was very punctual in filling his cars when he got an empty. Bird then informed the mine boss that there was something wrong in Weir's room as he could not find Weir, but the bucket and coat was there, so Messrs. Blower, Bird and Penn (the roadsman) went in the room and examined it, and after a search they found Weir under the coal and slate, and from the condition of the body it was supposed that he was killed immediately after dinner on Saturday; the supposition is that he was bearing in at the time the coal and slate fell on him. Inquest held and a verdict of accidental death rendered.

On April 3, John Raffin, a miner, aged 60 years, was instantly killed by falling slate in room five, entry 28, Ivil mine. Raffin had about two-third of a bearing-in done, and while at work finishing up, a piece of slate 2 feet 9 inches wide and 7 feet 9 inches long, and about 12 inches thick fell on him with the above result. It seems that there was a slight squeeze on the face of the coal which had a tendency to make the slate loose. There were three slate posts in the room, and if they had been used, this casualty might have been averted. He leaves a widow and five children.

A fatal accident occured in Globe mines on April 3, which resulted in the death of Isaac Masters, aged 50 years; Mr. Masters was in the act of drawing slate-posts at the time of the accident, in the fourth pool of the Monongahela river. In a great many places it is customary to post up the slate for quite a distance in the rooms and entries at times, as was done in this case, and when the deceased was in the act of taking out the posts from under the slate preparatory to leaving it drop (some of it was down), and Masters was in the act of taking down more of it, when it fell with the above result. From what I could learn in my investigation of this accident, the mine boss had told the deceased to start in front to knock out the posts, as he considered it safer to do this; it seems this was not done, but, on the contrary, he went too far under to knock the posts out; numerous slips in the slate were visible in this room, which made the taking out of posts somewhat dangerous. He leaves a widow and three children.

On the 7th of April John Taylor, a miner working in the Ivil mines, received a compound comminuted fracture of the right knee by falling slate, the fracture extending six inches below the knee joint and into the joint. It was the opinion of the attending physician that the leg should have been amputated immediately after the accident, but the family and friends opposed this and called in a consulting physician, and it was

decided to use conservative surgery and try to save the leg. About eleven days after the accident the condition of the case was such that amputation was absolutely necessary. This was done by amputating the lower third of the thigh, but mortification of the foot as well as blood poisoning having set in, he lived only seven days after the amputation.

Alexander McMichaels, a miner, aged 22 years and single, was instantly killed by falling slate in Catsburg mine April 22. From the statement made to the writer by Mr. Edward Taylor, who worked with the deceased, it appeared that he was wedging coal at the time the slate fell on him. On examination I found there had been some three feet of slate on clear across the room; a small tight six feet long and three feet deep shot had been fired, the coal from which the greater part had been loaded, which made the tight slate some six feet. This slate, up to the face of the coal, showed slips, and I would infer that it had been dangerous and could have been detected if examined carefully. Having this view I questioned Mr. Taylor in regard to the matter, and he said that they had sounded the slate a few minutes before it fell. Now it is evident that it deceived them in their examination of it. Neither of these men were practical miners.

Turner Brown, a miner employed at the Tremont mine, was fatally injured by falling slate on the 25th of April. He had fired a middle shot and was loading a car out of it. This car was about two-thirds full when a piece of slate four feet in length, —— feet in width and some ten inches thick fell on him. An inquest was held and a verdict of accidental death rendered. I was not at the inquest, it being held during my absence in the mine examining the place where the accident occurred. Not being satisfied with this mode of procedure, I questioned the acting coroner as to why he did not wait until I came out of the mine so that I could if I choose, use my prerogative as regards the witnesses. The answer of the acting coroner was that the foreman of the jury did not think it necessary for me to be present. This gentleman, I was informed, was studying law, and I suppose that he thought he was right in the matter. He may have known something about some other laws, but it is evident that he was not "well learned" in the mining law. Being satisfied in my own mind that this was a pure accident, I let the matter drop. I then informed the acting coroner that when a fatal accident occurred the inspector has a right to be present during the holding of an inquest if he thinks it necessary.

A miner named Henry Curtin was fatally injured in room 27, entry 5, Buffalo mines, on August 19. Curtin, at the time the slate fell, was taking the bearing-in slates of the coal. The slate was seven feet long, two feet wide and ten inches thick. He only lived four hours after the accident.

Andrew Roshovensky, a miner, was instantly killed by a fall of slate in Coal Bluff mines on August 26. The deceased was turning a room, and had quite a quantity of slate on with two props under it, which, from the appearanc of the place and the position in which the body was found, he was in the act of knocking the aforesaid posts out when the slate fell. On examination of the place of accident I found a slip extending clear across the place, showing that the whole weight of the slate was resting on the posts, and it seemed that the deceased went under this to knock out the supports. He leaves a widow and three children in Austria.

George Hutchison, a driver, was fatally injured in Fayette City mine on the 10th day of September, by being run over with coal cars; the deceased was moving his trip, out-bound in entry 3. The mule that he was driving had a habit of jerking, and to prevent this as much as possible, Hutchison would stand on the front of the first car, with one hand resting on part of the harness, and while doing this, the mule started, and he jumped on the bumper of the car, but he slipped off, and was caught by the trip and run over, mangling one of his legs pretty badly as well as other parts of his body, which resulted in his death on November 21. He left a widow and three children.

John Lowstutter, a miner, aged 63, was fatally injured in Abe Hays mine, entry 7, room 21, October 6, by a fall of slate; lived about nine days after being hurt. The deceased was knocking coal at the time the slate fell on him. This room where the accident occurred was troubled a great deal by "Soot" vein and it made the slate very dangerous. I examined the place where the accident occured and found the slate full of slips. He had a post under part of it, but it broke between them with the above result. He leaves a widow and five children, all grown except one.

Razzano Lainge was fatally injured by a fall of slate in Catsburg mine on October 23, death resulting the same day. Lainge and a boy worked together in the room. In the left rib of this room a clay vein made its appearance and to avoid cutting it they tried to make the room wider on the right side, and had taken out about 7 feet in, and some 9 feet wide, in which the slate was still up; and while the deceased and boy were working under it, it fell with the above result, and injuring the boy who was about fourteen years of age quite severly. He leaves a widow in Italy, how many children I am not able to learn.

TABLE I—*Showing location of collieries in the First Bituminous Mine District.*

NAME OF COLLIERY	Name of operator.	Location—County	Name of superintendent.	Postoffice address.
Allen	Allen Coal Company	Washington	A. S. Braynell	Monarch
Acme	Stockdale Coal Company	"	"	"
Anderson	D. M. Anderson	"	D. M. Anderson	Venetia
Abe Hayes	Abe Hayes Coal Company	"	T. S. Hutchinson	Monongahela City
American	William Radcliff	"	William Radcliff	Roscoe
Amity	S. S. Crump & Co.	Allegheny	S. S. Crump	Dravosburg
Allequippa	Bailey, Wilson & Co.	"	William Wilson	Camden
Albany	Snowden & Hogg	Fayette	F. T. Hogg	Brownsville
Blyth	Blyth Coal Company	Washington	John Lamb	Speers
Bellevue	Gumbert & Huey	Allegheny	R. R. Gumbert	Bladr
Bunola	O'Neil & Peterson	"	G. W. Peterson	Bunola
Black Diamond	W. H. Brown Sons	Washington	James Louttit	Monongahela City
Bowman	A. G. Leonard & Co.	"	A. G. Leonard	West Brownsville
Buffalo	Covey Gas Coal Company	"	Thomas F Neel	Courtney
Banner	J. M. Risher	"	R. B. Drum	Shire Oak
Carondelet	Little Redstone Coal Company	Fayette	John Jones	Fayette City
Cincinnati	J. S. Neel	Washington	"	Courtney
Cliff	J. M. Risher	"	R. B. Drum	Shire Oaks
Catsburg	Catsburgh Coal Company	"	John H. Jones	Monongahela City
Clipper	Allenport Coal Company	"	Robert Jack	Allenport
Courtney	Courtney Coal Company	"		
Coal Bluff	Monongahela and P. C. G. Coal Company	"	Thomas Watkins	Coal Bluff
Caledonia	T. J. Wood	"	Ezra Conaway	Woods Run
Champion	"	"	"	"
Camden	George Lysle & Sons	Allegheny	Joseph Griffith	Camden
Climax	Pittsburgh and Bellevue Coal Company	Fayette	Thomas Neel	California, Washington county
Cedar Hill	Cedar Hill Coal Company	"	Samuel Rollison	" " "
Eclipse	Osborne, Seager & Co.	Washington	George W. Cotton	Venetia
Fidelity	Fidelity Coal Company	"	Henry Kinlock	Roscoe
Fayette City	Samuel O'Neil, Att'y	Fayette	James O'Neil	Fayette City
Fulton	George Jones & Co.	Allegheny	Thomas Jones	West Elizabeth
Faucetts	Thomas Faucett & Son	Westmoreland	Thomas Faucett, Jr.	Webster
Garfield	J. S. Neel	Washington	John T. Jones	Courtney
Greenfield	"	"	J. S. Neel	Coal Centre
Gastonville	Pittsburgh and Chicago Gas Coal Company	"	D. W. Van Eman	Gastonville
Germania	Briggs & Flint	Fayette	Thomas S. Briggs	Roscoe, Washington county
Globe	Globe Coal Company	Washington	R. L. Leadbeater	Coal Centre
Horner & Roberts, No. 3	Horner & Roberts	Allegheny	S. S. Roberts	Elizabeth
Horner & Roberts, No. 4	" "	"	"	"
H. D. O'Neil	H. D. O'Neil	"	H. D. O'Neil	"
Hilldale	Hilldale Coal Company	Washington	Evan Beedle	Jones Station, Allegheny county
Iwill	James Jones	"	James Jones	Monongahela City
Jefferson	Foster & Clark	Allegheny	Thomas Foster	Coal Valley
Knob	Knob Coal Company	Washington	S. H. Pearsall	West Brownsville
Lovedale	John A. Wood & Son	Allegheny	George R. Gray	Elizabeth
Molsberger	G. Molsberger	Westmoreland	W. Molsberger	Webster
Milesville	Robert Jenkins	Allegheny	Robert Jenkins	Sunny Side
Nottingham	Henry Florsheim	Washington	E. F. Miller	Finleyville
Old Eagle	W. H. Brown Sons	Allegheny	James Louttit	Monongahela City

Rock Run	W. H. Snodgrass heirs	Allegheny	James Sheridan	Camden.
Robbins	Robbins & Co.	"	Alexander A. Himmo	McKeesport.
Stone	Stone Coal Company	"	George W. Stone	"
Snowden	Pittsburgh and Chicago Gas Coal Company	"	D. W. Van Eman	Gastonville.
Snow Hill	Alps Coal Company	Fayette	Joseph Underwood	Roscoe, Washington county.
Stony Hill	J. N. Dixon	"	John N. Dixon	California, " "
Slippy Rock	—— Johnson	Greene	—— Johnson	Waynesburg.
Stockdale	John Crombie	Washington	John Crombie	Webster, Westmoreland county.
Tremont	John A. Wood & Son	Fayette	S. B. Graham	Bellevernon.
Umpire	C. L. Snowden & Co.	"	John Simpson	Brownsville.
Union Valley	Henry Florsheim	Washington	M. G. Gibson	Finleyville.
Woods Run		"	T. J. Wood	Woods Run.
Watson	Watson Coal Company	Allegheny	Joseph L. Watson	Monongahela City
Walton's Upper Mine	Joseph Walton & Co.	"	John W. Rihe	West Elizabeth.
Walton's Lower Mine	" " "	"	"	"

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the First Bituminous Mining District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Allen	Washington	6,882.95		9,602,15	91	22			100		1		
Acme	"	69,001.32		103,091.45	200	104		1	500		8		
Anderson	"	30,420		30,420	251	48					6		
Abe Hayes	"	34,870.5		34,870.5	176	51	1				8		
American	"	66,072		66,072	232	79			420	1	8		
Amity	Allegheny	117,722		138,000	213	220		2			15		
Allequippa	"	136,563		136,563	2113	171		1		2	13		
Albany	Fayette	83,157		102,347	247	102				2	8		
Blyth	Washington	17,827.6		17,827.6	144	53		1			2		
Bellevue	Allegheny	30,240		30,240	75	137		1		2	10		
Bunola	"	58,400		58,400		92	1			1	9		
Black Diamond	Washington	47,087		47,087		157		3		1	6		
Bowman	"	18,000	1,700	16,200	180	34				1	2		6
Buffalo	"	41,106		41,106		197	1	3		1	12		
Banner	"	118,054		118,054	269	156		2		2	4		
Carondelet	Fayette					32							
Cincinnatia	Washington	34,151		34,151	200	100	1		300	1	8		
Cliff	"	35,820		35,820	100	88				1	3		
Catsburg	"	90,218		90,218	277	144	3		250	2	8		
Clipper	"	94,614		94,614	238	149		3	120		7		
Courtney	"	32,381		32,381		95				1	4		
Coal Bluff	"	57,537		57,537	220	106	1	5			6		
Caledonia	"	77,744		117,744	263	111		5	800		6		
Champion	"	82,278		123,417	266	103		2	850		6		
Camden	Allegheny	68,966		68,966	205	164				4	12		
Climax	Fayette	25,756		25,756	200	48			44	3	3		
Cedar Hill	"	37,000		37,000	200	51		1			3		
Eclipse	Washington	39,669		39,669	220	64		2	150	1	6		
Fidelity	"	46,000		46,000	160	62					3		
Fayette City	Fayette	127,741		127,741	293	169	1				10		
Fawcett	Westmoreland	59,587		59,587	120	159		1	115	3	8		

Garfield	Washington	8,752		8,752	60	89			25		4		
Greenfield	"	70,160		70,160	244	117		4	500	1	7		
Gastonville	"	73,000		73,000	268	104			148		6		
Globe	"	85,123		85,123	238	137	1		560	1	8		
Germania	Fayette	8,704		8,704		18				1	4		
Horner & Roberts No 3	Allegheny	17,137,834		17,137,834	121½	39				3	3	1	
Horner & Roberts No 4	"	48,127		48,127	216½	115	1				5		
H. D. O'Neil	"	83,480		83,480	246	100		2		1	5		
Hilldale	Washington	58,218		58,218	246	100				1	5		
Ivil	"	106,867		106,867	277	202	3	5	300	3	9		
Jefferson	Allegheny	53,500		53,500	156½	117				2	6		
Knob	Washington	100,221		100,221	238	162		1	400	3	10		
Lovedale	Allegheny	29,676		29,676	160	103			125	2	5	1	
Milesville	"	36,241		36,241	248	99		2	200	2	5		
Molsberger	Westmoreland	40,000		40,000	246	197		3	20	1	8		
Nottingham	Washington	34,159		34,159	273	69			125		3		
Old Eagle	Allegheny	88,480		88,480	241½	170		2	441	3	12		
Rock Run	"	65,214		65,214	235	93		3			6		
Robbins	"	20,363		20,363	126	40			18		4		
Stone	"	47,500		47,500	190	120					6	1	
Snowden	"	113,800		113,800	365	138		2	76	1	14		
Stony Hill	Fayette	74,259		74,259	239	90				1	5		
Snow Hill	"	139,519		139,519	270	159		2	275	2	6		
Slippy Rock	Greene												
Stockdale	Washington	21,566		21,566	190	48		1	35		4		
Tremont	Fayette	56,985		56,985		102	1	2			6		
Umpire	"	59,527		59,527	245	108		1	200	2	9		
Union Valley	Washington	63,999		63,999	267	135		1	250	2	8	1	14
Watson	Allegheny	63,900		63,900	196¾	118		2	75	1	4		
Walton's Upper mine	"	212,608		212,608	231	251				2	14	1	
Walton's Lower mine	"	112,854		112,854		172		1		2	10	1	
Total		3,788,804,184	1,700	3,944,423	11,326	6,632	15	77	7,722	66	406		20

* Could not get output; only run a few weeks.

† By former operator, 6,859.

‡ Engine coaling.

TABLE III — *Showing the number of each class of employes at each colliery in the First Bituminous Mine District, during the year 1890.*

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Allen	Washington	1	15	2		1		19		1			1	1	3	22
Acme	"	1	80	10		4		95		1			5	3	9	104
Anderson	"	1	40			4		45		1			2		3	48
Abe Hays	"	1	40			5	2	48					2	1	3	51
American	"	1	60	6		6	1	73		1			4	1	6	79
Amity	Allegheny	1	175	13	3	13	2	206		1			12	2	14	220
Allequippa	"	1	120	11	4	10	4	150		3		1	16	1	21	171
Albany	Fayette	1	68	12	2	7	2	92		2		2	5	1	10	102
Blythe	Washington	1	40	5		2		48					3		5	53
Bellevue	Allegheny	1	100	14	1	8		124		2		1	8	3	13	137
Bunola	"	1	75		1	4	2	83		1		1	5	2	9	92
Black Diamond	Washington	1	110	8	12	7	1	139		2		1	14	1	18	157
Buffalo	"	1	150	6	2	6	1	181		2		2	10	2	16	197
Banner	"	1	125	7	2	4	1	140		2		2	9	3	16	156
Bowman	"	1	22		3	2	1	29				1	3	1	5	34
Carendelet	Fayette	1	20	2	3	2		28					3	1	4	32
Cincinnati	Washington	1	77	4	1	9	3	93		1	1		4	1	7	100
Cliff	"	1	65	5	1	3	1	76		1	2		6	3	12	88
Catsburg	"	1	100	3	2	6	1	133		1	1		7	2	11	144
Clipper	"	1	98	10	14	7	1	131		1			15	2	18	149
Courtney	"	1	70	10	1	4	3	89		1	1		3	1	6	95
Coal Bluff	"	1	80	6	1	6	3	97		2			6	1	9	106
Caledonia	"	1	80	12	1	6	2	102		2			5	2	9	111
Champion	"	1	73	12	1	6	2	95		1			5	2	8	103
Camden	Allegheny	1	135		2	10	1	149		1	1		12	1	15	164
Climax	Fayette	1	35	1		3		40		1	1		2	2	6	46
Cedar Hill	"	1	40	3		3		47		1			3		4	51
Eclipse	Washington	1	45	4	3	3	2	58		1	1		3	1	6	64
Fidelity	"	1	50	4		3		57		1			2	2	5	62
Fayette City	Fayette	1	129	15	5	10		160		2			5	1	8	169
Faucetts	Westmoreland	1	130	8	2	8		149		2		1	6	1	10	159
Garfield	Washington	1	75	3	1	4	1	86					2	1	3	89

Greenfield	"	1	90	6	1	7	4	109		1	1		5	1	8	117
Gastonville	"	1	75	14	1	4	3	99		1			3	1	5	105
Germania	Fayette	1	8	1	6	2		18								18
Globe	Washington	1	110	5	1	8	3	128		1			6	2	9	137
Horner & Roberts No 3	Allegheny	1	26	3	1	3		34		2	1		2		5	39
Horner & Roberts No. 4	"	1	92	8		5	3	109		1			3	2	6	115
H. D. O'Neil	"	1	80	5		5	1	92		1	1		6		8	100
Hilldale	Washington	1	70	5	10	3		89		1	1		4		6	95
Ivil	"	1	150	3	2	9	2	167		2	3		8	2	15	182
Jefferson	Allegheny	1	90	4	11	6		102		1	1		10	3	15	117
Knob	Washington	1	125	1	11	10	1	148		2	2		7	2	14	162
Lovedale	Allegheny	1	75	6	4	4		90		1	2		8	2	13	103
Millesville	"	1	70	5	7	4	1	88		1	1		6	3	11	99
Molsberger	Westmoreland	1	80	3	1	4		89		1	1		4	2	8	97
Nottingham	Washington	1	50	8		3	1	64		1			2	2	5	69
Old Eagle	Allegheny	1	130	7	3	9	2	152		2	2		12	2	18	170
Rock Run	"	1	70	6	1	5		83		1			7	2	10	93
Robbins	"	1	29	2	1	3		36			1		2	1	4	40
Stone	"	1	90	12	1	5		109		1	1		7	2	11	120
Snowden	"	1	94	21	1	9	3	129		2	1		5	1	9	138
Snow Hill	Fayette	1	123	15	1	6	2	148		2	1		6	2	11	159
Stony Hill	"	1	70	4	1	5	1	84		1	1		4		6	90
Slippery Rock	Greene		7		1			8								8
Stockdale	Washington	1	35	3	1	4		44					3	1	4	48
Tremont	Fayette	1	80	5	1	6	1	94		1			6	1	8	102
Umpire	"	1	81	6	2	8	1	99		1	2		5	1	9	108
Union Valley	Washington	1	100	13		5	3	125		1	1		6	2	10	135
Watson	Allegheny	1	85	6	4	5	2	103		1	1		10	3	15	118
Walton's Upper mine	"	1	200	14	2	14		231		3	2		15		20	251
Walton's Lower mine	"	1	150	10	1	10		172		2	2		10	1	21	193
Total		61	5,035	399	143	347	67	6,052		73	49		369	89	580	6,632

TABLE IV— *List of Fatal Accidents occurring in and about the mines of the First Bituminous Mine District for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON	Occupation.	Age.	Widow	Number of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
Feb. 4.	John Ward.	Miner.	70	S.	..	Cincinnati.	Washington.	Killed by a fall of coal and slate.
Mar. 5.	Benjamin Ferree.	"	49	W.	4	Ivil.	"	Fatally injured by a fall of coal and slate Died several hours after being hurt.
13.	James E. Montgomery.	"	61	W.	7	Catsburg.	"	Killed by being run over by a dilly trip.
29.	Patrick Sheedey.	"				H. & R. No. 4.	Allegheny.	Killed by falling slate.
29.	Joseph Weir.	"	46	S.	..	Bunola.	"	Killed by a fall of coal and slate.
April 3.	John Raffin.	"	30	S.	..	Ivil.	Washington.	Instantly killed by a fall of slate.
3.	Isaac Masters.	"	60	W.	5	Globe.	"	Killed by falling slate.
7.	John Taylor.	"	51	W.	3	Ivil.	"	Fatally injured by fall of slate. Died on the 26th
22.	Alexander McMichael.	"	40	W.	2	Catsburgh.	"	Killed by a fall of slate.
25.	Turner Brown.	"	22	S.	..	Tremont.	Fayette.	Fatally injured by a fall of slate. Died nine hours after being hurt.
Aug. 19.	Henry Curtin.	"	40	..	4	Buffalo.	Washington.	Fatally injured by falling slate. Died some four hours after being injured.
26.	Andrew Roshovensky.	"	28	S.	..	Coal Bluff.	"	Instantly killed by a fall of slate.
Sept. 10.	George Hutchinson.	Driver.	32	W.	3	Fayette City.	Fayette.	Fatally injured by coal car. Died November 21.
Oct. 6.	John Sonstetter.	Miner.	63	W.	5	Abe Hayes.	Washington.	Fatally injured by a fall of slate. Died on the 16th.
23.	Bazzano Lainge.	"	..	W.	..	Catsburg.	"	Fatally injured by falling slate. Died the same day.

TABLE NO. V—*List of Non-Fatal Accidents occurring in and about the mines of the First Bituminous Mine District, for the year ended December 31, 1890.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 4.	James Carteel,	Miner,	41	M.	..	Champion,	Washington,	Painfully injured on leg by being struck by post which was knocked out by a fall of slate.
10.	Joseph Charlder,	"	24	..	..	American,	"	Foot injured by falling coal.
"	Anthony Monler,	"	..	..	..	Allequippa,	Allegheny,	Two ribs broken by coal car.
11.	William Hutchinson,	Driver,	..	M.	..	Abe Hays,	Washington,	Leg injured by being caught between coal car.
16.	Rosser Reese,	Miner,	..	M.	7	Camden,	Allegheny,	Injured by coal car.
16.	Robert Hanley,	"	..	M.	3	"	"	Injured by coal car.
18.	David Forsythe,	"	..	..	..	Abe Hays,	Washington,	Slightly injured by falling slate.
23.	Samuel Blachmore,	"	27	M.	..	Walton's Upper Mine,	Allegheny,	Both legs broken by a fall of roof coal.
25.	George Clark,	"	32	..	..	American,	Washington,	Toe broken by falling coal.
27.	Robert Wood,	"	32	M.	..	Greenfield,	"	Leg broken by a fall of coal.
27.	Andrew Boyd,	"	16	S.	..	Faucetts,	Westmoreland,	Collar bone fractured by a fall of coal.
Feb. 3.	Charles Kensler,	"	68	M.	..	Gastonville,	Washington,	Hand injured by post.
4.	Albert Plum,	"	48	M.	..	Caledonia,	"	Injured by falling coal.
11.	Henry Patterson,	"	..	S.	..	Bellevue,	Allegheny,	Collar bone broken by a fall of slate.
14.	Eli Lilley,	Driver,	23	S.	..	Globe,	Washington,	Nose broken by a kick from mule.
15.	Henry Smith,	Miner,	30	M.	..	Ivil,	"	Leg broken by a fall of slate.
17.	John Bonner,	Mine boss,	44	M.	..	Gastonville,	"	Foot injured by a switch ball falling on it.
17.	James Davis,	Miner,	29	M.	..	Cedar Hill,		Seriously injured by a fall of slate.
21.	William Ivill,	"	29	M.	..	Ivil,	Washington,	Hand injured by falling slate.
Mar. 1.	Samuel Roberts,	"	..	..	..	Black Diamond,	"	Hand injured by being caught between car and post.
5.	William Matthews,	"	19	S.	..	Walton's Lower Mine,	Allegheny,	Injured by a fall of slate.
10.	Angel Rossine,	"	29	M.	..	Ivil,	Washington,	Leg injured by a fall of slate and coal.
11.	Bernard Hill,	"	34	M.	..	Snowden,	Allegheny,	Arm broken by a fall of "horseback."
28.	Robert Thompson,	"	36	S.	..	Caledonia,	Washington,	Leg seriously injured by car.
29.	Charles Laument,	"	26	S.	..	Old Eagle,	Allegheny,	Arm and head slightly injured by being caught between car and rib.
April 2.	William Carral,	"	23	S.	..	"	"	Thigh fractured by a fall of slate.
"	Elsworth Reed,	"	28	M.	..	Stony Hill,	Fayette,	Leg broken by a fall of slate.
2.	Roger Rigby,	"	..	..	..	H. D. O'Neil,	Allegheny,	Back injured by a fall of slate.
4.	John Leech,	Driver,	22	S.	..	Buffalo,	Washington,	Leg badly mangled by being caught by tail-chain hook while moving with it. Leg has since been amputated.
10.	William Heast,	"	..	..	..	Clipper,	"	Hurt slightly by a car running on him.
14.	James Douglass,	Miner,	..	..	..	Cincinnati,	"	Both legs broken by a fall of slate.
15.	Thomas Davis,	"	50	..	..	Acme,	"	Collar bone injured by a falling post.
16.	William Louis,	Day hand,	21	S.	..	Ivil,	"	Slightly injured by dilly-trip.
24.	Henry Jackson,	Miner,	13	S.	..	Walton's Upper Mine,	Allegheny,	Leg broken by a fall of coal.
29.	Averal Young,	"	22	S.	..	Globe,	Washington,	Foot injured by a fall of slate.
May 1.	Henry Young,	"	15	S.	..	Allequippa,	Allegheny,	Leg broken and otherwise injured by a fall of slate.
5.	Robert Little,	"	..	..	..	Watson,	"	Seriously injured by a fall of slate.

TABLE V—*Continued.*

Date of accident		NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location County.	Nature and cause of accident.
May	6.	John Swichey,	Driver,				Acme,	Washington,	Arm mangled by car, necessitating amputation.
	9.	William Clark,	Miner,				Catsburg,	"	Leg broken by a fall of roof coal.
	14.	Henry Parkins,	"	14			Caledonia,	"	Chest severely injured by being caught between empty and loaded cars.
	24.	Joseph Brown,	"	50	M.		Snow Hill,	Fayette,	Leg broken by a fall of slate.
June	9.	John Gilmore,	"				Stockdale,	Washington,	Leg cut off by cars while walking down incline.
	17.	Samuel Carney,	"		M.		Milesville,	Allegheny,	Seriously burned by fire-damp.
	17.	Ellsworth Carney,	"		S.		"	"	Seriously burned by fire-damp.
		James Hamilton,	"		M.		Catsburg,	Washington,	Seriously injured by a fall of slate.
		Anson Hillman,	"		S.		"	"	Seriously injured by a fall of slate.
July	5.	Gottlieb Schwatz,	"				Snowden,	Allegheny,	Leg broken by a fall of "horseback."
	7.	William Spence,	Day hand,				Watson,	"	Slightly burned by fire-damp.
	7.	John Jones,	"				"	"	Slightly burned by fire-damp.
	7.	Robert Craig,	"				"	"	Slightly burned by fire-damp.
	7.	John Carter,	"				"	"	Hurt by the concussion of an explosion of fire-damp.
	7.	Joseph Atwood,	Miner,	37	M.		Umpire,	Fayette,	Leg broken by a fall of coal.
	11.	Joseph Zoe,	"	55	M.		Coal Bluff,	Washington,	Toe injured by a fall of slate.
	22.	Griffith Amolong,	"		M.		Milesville,	Allegheny,	Leg broken by a fall of slate.
	23.	Eugene Bulty,	"		S.		Banner,	Washington,	Leg broken by falling coal and slate.
		Amos Chester,	"	16	S.		Catsburg,	"	Ankle broken by a fall of coal.
		William Ball,	"				Bowman,	"	Leg broken by a fall of slate.
Aug	20.	John Porter,	Mine boss,		M.		Buffalo,	"	Injured by cars.
	26.	Patrick Trainor,	Miner,	15			H. & R. No. 3,	Allegheny,	Hand crushed by a fall of coal and slate.
Sept	2.	Joseph Vanvoston,	"		M.		H. D. O'Neil,	"	Hand slightly injured by a fall of slate.
	3.	Thomas Hall,	"				"	"	Seriously injured by falling roof coal on head and face.
	15.	George Walters,	"	42	M.		Champion,	Washington,	Injured by being caught between cars.
	15.	Allen Jones,	"				Cincinnati,	"	Foot crushed by cars.
	19.	Henry Parkins,	"	14	S.		Champion,	"	Head injured by a fall of coal.
	23.	Robert Edgar,	"	58			Anderson,	"	Right clavicle fractured by being caught between mine cars.
Oct.	7.	Thomas Collins,	Driver,	16	S.		Caledonia,	"	Arm broken by being caught between cars and rib.
	23.	Razzano Zisvalne,	Miner,	14	S.		Catsburg,	"	Leg broken and otherwise injured by falling slate.
	29.	Lawrence McCarty,	Driver,				Courtney,	"	Severely hurt by being caught between car and rib.
	30.	John McCarty,	Miner,	60	S.		Ivil,	"	Injured by a fall of coal.
Nov.	3.	Richard Weightman,	"	38	M.		"	"	Severely burned about the face and head by fire-damp.
	18.	John Pratt,	"				Black Diamond,	"	Injured by falling slate.
Dec.	9.	Clarence Rowe,	Day hand,	16			H. & R. No. 4,	Allegheny,	Leg broken by cars while moving trip to check-house.
	11.	Michael Embhum,	Miner,	65	M.		Amity,	"	Head and shoulders injured by falling slate.
	11.	John Jwaden,	"				Walton's Upper,	"	Leg broken by a fall of slate.
	12.	George Syker,	Driver,				Allequippa,	"	Leg injured by being caught between empty car and rib.
	22.	William Redman,	Miner,				H. D. O'Neil,	"	Seriously injured by a fall of "horseback."
	23.	Richard Buzza,	"				Walton's Upper,	"	Leg broken by a fall of slate.

SECOND BITUMINOUS DISTRICT.

(ALLEGHENY AND WESTMORELAND COUNTIES.)

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: In compliance with the tenth section of the act of assembly approved the 30th day of June, A. D. 1885, I have the honor to submit my annual report as inspector of mines of the Second Bituminous coal district of Pennsylvania, for the year ending December 31, A. D. 1890. There are now eighty mines in this district, which, when in operation, come within the jurisdiction of the law, all of which were visited during the year as frequently as my time would permit, and the accompanying record shows the condition of each mine at the time of my visit. There is a marked improvement in the condition of the mines in this district, which is due to the new and improved machinery for hoisting and hauling the coal, and the larger fans, and better furnaces which have taken the place of the old ones; but with all the increased facilities for proper ventilation, unless those who have charge of the mines see to it that the currents of air are properly divided and circulated to the face of all working places, so as to dilute and carry off all noxious gases, the improvements are in a great measure useless. I again urge upon the mine bosses and fire bosses the necessity and importance of a strict observance of the provisions of the mining laws, and rules at the mines, and require that they be strictly carried out, and in no case permit any one to work in an unsafe place.

The security of the mines, and the safety and health of the miners are committed to their care, and in view of this, it is their duty to demand that their orders are faithfully and strictly carried out. Thereby not only doing their duty, but at the same time are doing what is required of them. Although many of the lives lost during the past year were carelessness of the victims themselves, yet this must not deter them from enforcing the laws and the rules of the mines, and require strict obedience to them. I desire to call attention to the fact that last year nearly all the fatal accidents happened to old miners, but this has changed, as sixty-five per cent. of the fatal accidents this year were "greenhorns" or men who had little or no experience in the mines, and from present indications, this class of men will be our future miners, as many of our old miners are seeking other employment, therefore great care will be re-

quired with the new men until they become thoroughly acquainted with the dangers encountered in mining. I also desire to call attention to the fact that there were four accidents less this year than last year, three fatal and one non-fatal, one of which was to a person not employed at the mines, but who after being warned not to jump on the "larry" on the coke ovens did so and was fatally injured.

After a careful investigation of all the accidents, I have no hesitation in saying that many of them could have been prevented if ordinary care had been exercised, and the rules of the mines strictly observed.

If the mine rules were incorporated in the law, and made part of the same, and enforced, I can safely say that there would be fewer accidents, and the safety of the miners and others employed in and about the mines would be greatly enhanced.

The causes of these accidents appear in the following table:

CAUSES OF ACCIDENTS.	Fatal.	Non-fatal.
Falling slate,	11	17
Falling coal,	3	8
Falling down shaft,	1	. . . . .
Mine wagons,	3	20
Drowned in mines,	1	. . . . .
Larry on coke ovens,	1	. . . . .
Dilly in mine,	. . . . .	1
Fire damp,	. . . . .	1
Post,	. . . . .	3
Steam pipe,	. . . . .	1
Total,	20	51
Widows by fatalities,	. . . . .	8
Orphans' by fatalities,	. . . . .	21

The following statistics are a summary of accurate reports from all the mines, as set forth in the tables:

Mines in the district,	80
Mines in the district operated,	73
Mines opened during the year,	3
Mines abandoned during the year,	2
Number of persons employed in the mines,	8, 487
Number of persons employed outside,	3, 277
Total number of persons employed,	11, 764
Tons of coal mined,	6, 975, 879$\frac{1}{2000}$
Tons of coal shipped,	2, 866, 452$\frac{1}{2000}$
Tons of coke manufactured,	2, 781, 390$\frac{1}{2000}$
Average number of days worked by all the mines,	181

Tons of coal mined to each fatal accident,	367, 151½
Tons of coal mined to each non-fatal accident,	136, 782
Number of employes to each fatal accident,	619
Number of employes to each non-fatal accident,	230.27
Number of mules and horses in use,	954
Number of coke ovens operated,	6, 971
Number of mine locomotives,	3
Number of stationary engines for hoisting and hauling coal,	59
Number of pumps in use,	78
Number of steam boilers in use,	265

From the foregoing statistics it will be seen that the production of this year exceeds that of last by 60,708½ tons. This is remarkable under the circumstances, for there were many drawbacks in various parts of the district. The miners in the Irwin district, and two mines in Allegheny county were idle for many months on account of a strike, causing a loss at these mines, as compared with the production of 1889, of 1,003,414½ tons, and in wages to the miners alone, at 60 cents per ton, of $601,448.70. The foregoing facts show conclusively that neither the employe nor the employer is benefited in anyway by strikes, and if some plan could be devised whereby these troubles could be amicably adjusted, it would benefit not only those who are directly interested, but the entire community in which they occur. The danger from natural gas conveyed in pipe lines over the mines is still confronting us, and there is no relief, neither do I expect any consideration for the underground workmen until the country is startled by a fearful explosion resulting from the mines filling with this gas. It is claimed that there is no danger, and that I am too easily alarmed, but I can see danger and I believe it is my duty to call attention to it. The gas companies advanced the theory that if the gas pipes were covered with a few inches of broken stone, and an escape pipe placed at intervals of one hundred feet, the gas that would leak from the pipe line would escape to the open air. The courts acted upon this theory, and ordered the pipe lines to be so covered when passing over mine workings; a prominent mining engineer at Irwin demonstrated the fallacy of such a theory; he placed a pipe through a shaft of the same size as the escape pipe, and attached a small gas pipe to it. The result was that the gas was drawn into the mine by the exhaust fan, nothwithstanding the pipe was open to the air; I don't think that we need better proof than this to show the danger of laying gas lines under ground when passing over mine workings.

Respectfully submitted.

WILLIAM JENKINS,
Inspector.

IRWIN, WESTMORELAND COUNTY, PA.,
February 21, 1891.

I had the following circular printed and distributed in the district:

OFFICE OF INSPECTOR OF BITUMINOUS COAL MINES.

To Mine owners, Operators, Superintendents, Mine-bosses, Fire-bosses and other officials of the mines in this district:

You have committed to your care the lives, health, safety and welfare of all persons employed in and about your mines, and in view of this fact your duty is plainly set forth in the law, although many of its provisions are indefinite and ambiguous, yet you cannot evade it because of its obscurity. A faithful discharge of duty by the officials, and those having charge of the mines, and a prompt dismissal of careless or incompetent persons, especially those who drink to excess, is the only way to avoid accidents. Therefore all violations of mining law should be promptly reported to the inspector of your district who will prosecute such offenders, if the evidence warrants such prosecution. It is true that the fine for trivial offenses seems excessive, yet that must not deter us from our duty as set forth in the law. I suggest a careful study of the law and the rules of the mines by all mine officials and miners, so that they may fully know their duties and discharge them without fear or favor. Although many live up to the requirements, and go even beyond the provisions of the law, in order to better the condition of those in their employ.

I request that every place in a mine, when a mine gives off explosive gases, be examined by the fire-boss with a safety lamp before the miners are permitted to enter, and that carbon oil or other combustible matter (except powder, and that in quantities of not more than five pounds in a can as needed) be kept out of the mines.

That the mines are daily and hourly changing is exemplified by the late explosion at the Mammoth mine, which was reported safe and clear from fire-damp from four to five hours before the explosion. Therefore too much care cannot be taken in the examination of a mine before the miners are permitted to enter. I have the following suggestions to offer:

First. That all mines where gas is known to exist a barometer and a thermometer to be kept, and the pressure and temperature be carefully noted, for a sudden fall of the barometer and a corresponding rise in the temperature indicates an increase in the flow of gas, for the reason that the gas is even more sensitive than the barometer, and I have proven it to be so.

Second. That the mine officials and the inspector meet at some designated place or places to fully discuss matters pertaining to the safety of our mines.

The intelligence and practical experience of the mine officials in this district prompt me to make the foregoing suggestions, which I hope will meet with favor, and will result in avoiding future calamities in our

mines. Hoping you will do everything you can for the future safety of your employes.

I remain, yours respectfully,
William Jenkins,
Inspector.

Irwin, Pa., *February 9, 1891.*

Description of Mines and Mine Improvements in the Second Bituminous District.

Amieville mine.—This mine has not been in a very satisfactory condition during this year; part of the mine has been under water for a long time. The average amount of air in circulation per minute was 13,570 cubic feet; an air shaft has been sunk, and a furnace is in course of erection. A live and practical man has been employed for mine-boss. I don't expect to have any more trouble with this mine. Mining-boss, John McVicker.

Alexandria mine.—This mine had been kept up to the requirements of the law, with an average of 14,265 cubic feet of air in circulation per minute; on my last visit I discovered that there was not sufficient air in the mine to meet the requirements of the increased number of men employed therein. I therefore notified the management to try and improve the ventilation at once. Mining-boss, Daniel Campbell.

Calumet mine.—This mine has been kept in a healthy condition during the year, with an average of 27,589 cubic feet of air circulation per minute. Two "Yough" pumps have been placed in this mine to drain it, size, steam cylinder 24″, water cylinders 12″, length of suction pipe 350′, discharge 200′, size of suction pipe 12″, discharge 10″, strokes per minute 30. Mining-boss, David Young.

Carbon.—This mine has been kept in very good condition during the year. The average amount of air in circulation per minute was 39,180 cubic feet. On my last visit the distribution of the air was not as good as usual. Mining-boss, Joseph Wrightman.

Central.—This mine is in a reasonable fair condition, considering the trouble they have had with water during the year. The average amount of air in circulation per minute was 36,872 cubic feet. The rope haulage system was put in the mine this year. The engine house and engine are on the surface and there are two holes drilled for the wire rope to pass through, length of haul 2,400 feet, size of engine cylinder 14x24 with four-foot drums, steam pressure one hundred pounds, size of main rope $7\frac{1}{8}$″, tail rope $\frac{3}{4}$″. They haul twenty-four wagons at a trip of forty bushels each; two flue boilers 5″ in diameter and 14″ long supplies the steam for the engine. Mining boss, J. F. Anderson.

Dilworth.—This mine is kept in a healthy condition with an average of 13,550 cubic feet of air in circulation per minute. Mining-boss, Thomas Whiteman.

Duquesne.—This mine has not been kept in a satisfactory condition during the last year. On my visits I would always find something wrong, ventilation would be more defective in one entry than another, at other times the drainage would be bad. There was an average of 13,900 cubic feet of air at the outlet, but there was no care whatever taken to distribute this volume and circulate the same through the mine.

Denmark.—This mine is in a reasonable healthy condition, with an average of 38,400 cubic feet of air going out at the outlet. This volume is fairly distributed through the mine. A new fan was erected at this mine, the fan is twelve feet in diameter, built by the Novelty Manufacturing Company of Irwin, from plans made by A. N. Humphreys, mining engineer for the Westmoreland Coal Company; size of engine cylinder 16″x18″. Mining-boss, Edmond Whiteman.

Eureka.—This mine is in a healthy condition. The average amount of air in circulation per minute was 21,860 cubic feet. The drainage was all right. Mining-boss, A. J. Cook.

Emma.—A small furnace was built in this mine during the year which gives entire satisfaction. I measured at the outlet on my last visit 12,320 cubic feet. The distribution was all right and so was the drainage. Mining-boss, Adam Whitehead.

Frankstown.—This mine was idle when I made my last visit.

Greensburg.—This mine has been kept in a reasonably good condition with the exception of some entry sumps. Those entries had been driven single and it is almost impossible to get air into them when they are being drawn back. The average amount of air in circulation per minute was 25,552 cubic feet. Mining-boss, John McIntire.

Hempfield.—The condition of this mine has not been satisfactory at all times owing to the fan being nearly worn out. The average amount of air in circulation during my first three visits was 13,010 cubic feet per minute. On my fourth visit, November 17, I only measured 8,640 cubic feet at the outlet. I reported the deficiency to the superintendent, and requested him to replace the old fan with a new one. He agreed to do so as soon as possible. Mining-boss, Levi Ludwick.

Hampton.—The ventilation was reasonably good in this mine. I measured, on April 2, 18,360 cubic feet of air going out at the outlet per minute. The drainage was rather defective. On May 1 the miners came out on strike, and they are out on strike yet—December 31, 1890. Mining-boss, Edgar Thompson.

Hecla No. 1.—This mine has been kept up to the requirements of the mining law. The average amount of air in circulation per minute was 41,660 cubic feet. The distribution was very good and the drainage all right. Mining-boss, William Dean.

Hecla No. 2.—This mine is in a favorable condition. The ventilation is produced by exhaust steam from the pump. The average amount of air in circulation was 9,557 cubic feet per minute. The bottom has been

timbered for 150 feet with double-notched timber—size of timber post 12″x12″, collars 10″x12″. This size timber is used for some distance from the shaft bottom, then the size is reduced to 8″x8″. It makes a very neat job of work. An air-shaft for a second opening was sunk. This year a fan will be erected in the spring to ventilate the mine. Mining-boss, William Snedden.

Manor shaft.—This mine has been kept in a reasonably healthy condition during the year. The average amount of air in circulation per minute was 21,802 cubic feet. The drainage is in fair condition. Mining-boss, Samuel Ferguson.

Mutual Nos. 1, 2 and 3 mines.—No. 1 mine is about worked out, and the entry pillars are being withdrawn. No. 2.—The ventilation has been improved in this mine this year. A fan 12 feet in diameter has been erected at the mine, capable of producing 48,678 cubic feet of air per minute if necessary. I measured 22,974 cubic feet per minute going out at the outlet. This is an abundance of air for all sanitary purposes. A test of the fan was made by the mine boss, and the result is as follows:

	Revolutions.	Area.	Velocity.	Quantity.
First	50	42	644	27,040
Second	75	42	822	34,524
Third	115	42	1,159	48,678

No. 3.—A 12-foot diameter fan has also been erected at this mine, and it makes the ventilation very good; with proper care in the distribution there should be no more trouble about air in this mine. The drainage is all right; on my last visit I measured 29,720 cubic feet of air going out at the outlet per minute. The fan is capable of producing 66,240 cubic feet per minute; a test of this fan was made by the mine boss, and the result is as follows:

	Revolutions.	Area.	Velocity.	Quantity.
First	65	64	480	30,720
Second	90	64	871	55,744
Third	112	64	1,035	66,240

Mining-boss, William H. Hart.

Madison mine.—This mine is located near Madison, in Sewickley township, Westmoreland county, and is operated by the Madison Gas Coal Company. This is a new drift opening, opened this year; it has two openings, one for a haulage road and the other for an air-way and water course. The mine is ventilated at present by natural means, and

on November 8, there were only 3,080 cubic feet of air in circulation per minute. This small quantity was not sufficient, and I instructed them to build a furnace as soon as possible and they promised to do so. A tipple, ten blocks of houses, and all other necessary improvements have been made at the mine. Superintendent, Thomas Donahue; mining-boss, Martin Doyle.

Hostetter Coke Company Mines.

Whitney mine.—Substantial improvements have been made in this mine during the year; an air shaft was sunk; a fan of the Guibal pattern, 16′ in diameter, 4′ 7″ face, was erected; engine, ″12x16″, connected direct with the fan. The fan, making 26 revolutions per minute, produces 34,000 cubic feet, and on my last visit I measured 68,000 cubic feet going into the inlet. They are driving another traveling-way, so that they will have one on each side of the slope; a system of overcasts is being made, so as to provide each group of men with fresh air from the inlet, and to do away with doors, which are expensive and troublesome in mines. The owners and officials seem to want to comply strictly with the law. Mining-boss, John Pratt.

Lippincott mine.—This is a new plant, which was started on February 20, 1890. The mine is located five miles south of Latrobe, in Unity township, Westmoreland county, and is operated by the Hostetter Coke Company. This is a slope opening, on the eastern outcrop of the Pittsburgh coal seam. The coal dips 8½′ to the hundred, dip north 67° west. The slope has been driven to the dip 1,200′, and two man-ways, one on each side of the slope, are being driven; flat headings are being turned off the main slope at intervals of about 450′ on each side of the slope; butt headings are turned to the rise, off of these flats. A system of overcast has been adopted, so as to give a fresh current of air to each group of men, and do away with the doors on the main roads. The slope is 9′ wide by 7′ high; timber at the mouth and for some distance down the slope, with double notched timber 10″x12″; it is a neat piece of work. An air shaft, 35′ in depth and 13½′ in diameter has been sunk, and a fan of the Guibal pattern erected; fan 16′ in diameter by 4′ 7″ face; size of engine cylinder, 12″x16″. The engine is attached direct to the fan. On December 16, I measured 24,840 cubic feet of air in circulation per minute. The fan was moving at a very moderate speed. The outside improvements consist of a pair of double engines, 20″x36″; drums, 5′; wire rope, 1¼′; tubular boilers, 5′x16′; a brick engine house, a large coal bin, and 292 coke ovens, with all other necessary improvements. This is a model coke plant. The owners and officials have spared neither time nor money in making it so, which is greatly to their credit. Superintendent, F. J. Friend; mining-boss, George Eustis.

McClure & Co. Mines.

This company has eleven mines in the district.

Buckeye mines.—This mine is not always kept up to the requirements of the law. The ventilation is produced by exhaust steam from the pump, and at times this means of venlilation has no power over the air. Some improvements are promised in the near future. On my last visit I measured 12,430 cubit feet of air going out of the outlet per minute. The drainage in the dip headings has been rather defective. Mining-boss, John Hart.

Bessemer.—This mine is in a reasonable healthy condition, with an average of 15,225 cubic feet of air in circulation per minute. Mining-boss, George J. Burns.

Donnelly No. 1.—This mine has been kept in fair condition, during the year, with the exception of one visit. On this visit I discovered "black-damp" in dangerous quantities in one of the butt headings. The average amount of air in circulation is 10,900 cubic feet per minute.

Donnelly No. 2.—This mine is kept up to the requirements of the law, with an average of 13,177 cubic feet of air in circulation per minute. Mining-boss, Andrew Neish.

Enterprise.—This mine was not in a favorable condition until my last visit. The mine had been ventilated by natural means. This mode of ventilation was of no use in the summer, and I ordered the mine-boss to build a furnace, and he did so. Size of furnace, fire-bed 16 feet, length of arch 14 feet, depth of shaft 35 feet, stack 15 feet. The furnace when fired up has a capacity of 14,000 cubic feet. I measured at the inlet 7,980 cubic feet going in. The mine is now in good condition. Mining-boss, William Alexander.

Hazlett shaft.—The condition of this mine is very unsatisfactory, both as to ventilation and drainage. The mine is ventilated by exhaust steam, and this mode of ventilation has no power whatever over the air. On my last visit I measured 6,840 cubic feet of air at the inlet, but it was of very little use, as it did not go much beyond it.

Hazlett slope.—This mine has not been kept in a satisfactory condition; on my visit July 17th, there was much "black-damp" (carbonic acid gas) in the air, that it was not safe for any person to work in the mine; I gave orders to brattice some of the old abandoned works, so as to get the air circulated to the face, this improved the mine considerably, and I was able to measure on my next visit 10,920 cubic feet going out at the outlet, and this was the first measurement that I had been able to make during the year. Mining-boss, Alexander Davenpor

Mayfield.—The improvements at this mine consists of an entry drove to Donnelly No. 2, seven hundred feet long, in order to connect the two mines; fifty coke ovens have been added to the mine. The mine is in good condition with an average of 11,775 cubic feet of air in circulation per minute. Mining-boss, Peter P. Glenn.

Mullin.—This mine has been kept in reasonably fair condition with an average of 10,720 cubic feet of air in circulation per minute. On my third visit, July 22, the ventilation was rather defective. There being only 6,160 cubic feet at the outlet. Mining boss, Hugh Ross.

Union.—The condition of this mine has not been very satisfactory this year; at times some parts of the mine was hardly safe to work in. The average amount of air in circulation was 3,392 cubic feet per minute. They are now opening into a new field of coal. I expect that the new mine will be opened on the double-heading system and a furnace placed in a convenient location in order to produce good results. Mining-boss, R. S. Raygot.

New York and Cleveland Gas Coal Company.

Gravet.—The coal in this mine is taken out through the Sandy Creek mine.

Oak Hill No. 4.—On my last visit, March 29, I measured 17,220 cubic feet of air going out at the outlet per minute. This quantity was not sufficient to supply the number of persons employed in this large mine, and I informed the superintendent and mine-boss of the deficiency and they promised to attend to the matter at once. On May 1 the miners came out on strike and are still on strike, December 31, 1890. Improvements made during the year· A new modern and complete tipple and check house were erected. The prominent feature of the tipple are two dumping spaces which are manipulated by the Mitchell patent dump, and two movable top plates patented by the superintendent, T. B. DeArmit, by the use of which the coal may be distributed over different screens from the two dumps. The incline plane was graded so that four or five wagons can be run down in place of two, as before. A barney is used when uncoupled on tipple, passes through the Mitchell tipple and gravitates in place behind the empty trip. There is no mortising in the framing, all the work is double caps and double sills bolted together. Mining-boss, William P. Owens.

Plum Creek.—This mine has been kept in a reasonable healthy condition during the year. Another opening was made at the face of the mine which makes the ventilation better; the average amount of air in circulation per minute is 18,213 cubic feet. Mining-boss, William W. Carter.

Sandy Creek.—On my first visit to this mine, I found it in fair condition, with 12,780 cubic feet of air in circulation per minute. During the summer months the current dwindled down to 8,160 cubic feet. This small quantity was not sufficient to keep the mine in a healthy condition, and I requested the superintendent to sink a new air shaft, and build a new furnace, which he commenced at once. Depth of air-shaft 55 feet, diameter 7 feet; a 22 foot stack is built on top of shaft, size of furnace 7′x8′, 56 square feet fire bed, length of arch 24 feet. There are

man-holes on both sides to allow a current of air to pass between the furnace and coal; capacity of furnace with moderate fixing is about 30,000 cubic feet per minute; with proper attention there should be no further trouble about ventilation in this mine. Eight thousand feet of road was graded and relaid, and a locomotive is used which does away with 27 mules. Mining-boss, Joseph Corbett.

Ocean No. 1.—This mine has been kept up to the requirement of the law, with an average of 23,003 cubic feet of air in circulation per minute. An airway has been driven out at the face of the mine. This reduced the friction and enables them to get fresh air for the men. Mining-boss, John Matthews.

Osceola.—This mine has been well looked after, and has been kept in a healthy condition. The average amount of air in circulation is 25,440 cubic feet per minute. Mining-boss, H. D. Penman.

Penn Gas Coal Company.

Penn Shaft No. 1.—Important improvements have been made in this mine during the year. An air shaft was sunk, and a new fan erected 18 feet in diameter, from plans drawn by Mr. F. F. Wolf, mining engineer of the company. The return airway has been cleaned up and widened out; this will reduce the friction and a large volume of air will be the result. On my last visit I measured 36,670 cubic feet going out at the outlet. Drainage all right. Mining-boss, John Bolan.

Shaft No. 2.—This mine is kept in a very fair condition, with an average of 40,263 feet of air in circulation per minute. Mining-boss, Micheal Cauley.

Coal Run.—During the year this mine has been kept up to the requirements of the law, with an average of 24,675 cubic feet of air in circulation per minute. Mining-boss, William Rodgers.

Penn Gas No. 4 mine.—This mine is generally kept in good condition. The average quantity of air in circulation is 35,000 cubic feet per minute. Mine-boss, William Jamison.

Port Royal shaft.—This mine is in very fair condition, with an average of 17,450 cubic feet of air in circulation per minute. Mining-boss, John Simpson.

Republic.—This mine had not been in a very satisfactory condition owing to water getting into the mine from the Amieville mine and flooding it. They tried all means at hand to keep the water out, but were not successful. There was only a small chain pillar, four feet thick in some places, between the two mines, and the body of water was increasing along this pillar in the Amieville mine so as to endanger the lives of the men in the Republic mine. On August 26 the company was notified, in conformity with section eleven of the mining law, to suspend work until the danger was remedied. On receiving the notice the

company suspended operations at once, and since have not been able to get the water out. They have abandoned the mine.

Spring Hill No. 2.—This mine has been kept in a reasonably fair condition, with an average of 8,070 cubic feet of air in circulation per minute. On December 19 I found the mine in rather a bad shape, and the mine-boss outside running wagons down the incline. He was so busily engaged that he had no time to go around the mine with me. So it is not much wonder that the mine gets out of order when the mine-boss has to be the man of all work. The number of persons in the mine has increased from sixty to one hundred. The ventilation at the same time has dwindled down to 5,040 cubic feet per minute, and this small quantity was not circulated through the mine. There were not enough of doors hung to direct the current, and some of those that were hung were out of order. Mining-boss, William S. Gibson.

Smithton Nos. 1 and 2.—No. 1 mine has not been up to the requirements of the law during my several visits. The air has a long distance to travel, and the friction is great so that in the summer season six or seven thousand cubic feet were all that I could measure at the face. An entry is about to be driven out at the face. When this entry is through I expect to find the ventilation all right.

No. 2 mine is in reasonable condition, with an average of 11,870 cubic feet of air in circulation per minute. Mining-boss, George Moore; assistant, Thomas Parkins.

Standard Mines.

Standard No. 2 shaft.—This mine has been kept in good and healthy condition during the year. The average amount of air in circulation per minute was 50,643 cubic feet. "A" heading was driven through into the dip workings of No. 1 shaft. This shortens the distance and enables them to get a larger volume of air, and on my last visit I measured 86,010 cubic feet in circulation per minute. This volume is divided into five splits and circulated to the face of the headings. Everything in and about the mine is kept in good order. Safety-catches are tested every two weeks. Mining-boss, John A. Hart.

Standard slope.—The entire number of buildings that were destroyed by fire on December, 1889, have been rebuilt with brick and covered with iron roof, and new machinery and boilers placed in the buildings The engine and boiler-houses are now separated. It is a neat, substantial piece of work, and far superior to the old building and machinery. The slope has been re-timbered, and from the appearance of everything in and about the mine the company and its superintendent believe in the maxim that whatever is worth doing at all is worth doing well. The average amount of air in circulation was 37,950 cubic feet per minute. The drainage of the mine is all right. Mining-boss, John Whitfield.

Shaner No. 2.—This mine has been kept in a reasonably healthy condition during the year. The average amount of air at the outlet per

minute was 23,140 cubic feet. This volume was reasonably distributed through the mine. There has been a bad squeeze on the main heading caused by turning rooms, and leaving the pillars too small. The former management caused all this trouble; they were told often enough not to turn rooms on the main heading, and they were warned again after the pillars were taken out to crib the mouth of the rooms with old railroad ties, but no amount of warning will serve such people. A new slope opening has been made in this mine, and it will be used as a traveling way, and I believe that there will be no expense spared to make the mine safe and keep it in a healthy condition. Mining-boss James Bayley.

Blythe mine.—This mine is located on the Baltimore and Ohio railroad, in Westmoreland county, and is operated by John Blythe & Company. This mine was closed in 1866, when the dams were carried out of the Youghiogheny river in the winter of that year; it is now reopened, and the coal will be shipped by railroad. The air shaft has been cleaned up, and a furnace will be built as soon as possible. A new tipple has been built and all other necessary improvements; a tail-rope system of haulage will be put in soon. The mine is in fair condition. Mining-boss H. D. Thompson.

Mammoth Nos. 1 and 2.—I have measured an average of 52,645 cubic feet of air going at the inlet per minute. This volume was divided into two splits, 23,760 cubic feet going into the dip workings, and 28,885 going on the slope side; on November 14 I measured 8,960 cubic feet per minute on No. 2 flat and 9,310 cubic feet per minute on No. 3 flat; another air-way will be driven to the dip and a system of overcasts will be established for each flat heading, so that a fresh current of air can be circulated to the face of each heading; thus reducing the friction and increasing the quantity of air in the mines; it will do away with many of the doors that are now in use. The rope system of haulage was introduced in the shaft to haul the coal out of the dip workings; length of haul 2,600 feet. The engine is placed on the surface; a drill hole 6 inches in diameter was drilled to pass the rope through into the mine, size of rope $\frac{7}{8}$ inch, size of engines 18x24 feet. On August 26, the dip workings of the shaft were flooded by water breaking into the mine from the surface and one man drowned, his body was recovered September 14. It was December 10, before the water was all pumped out. Mine-boss, James Eaton.

The South West Coal and Coke Company's Mines.

No. 1 "A" shaft.—Important improvements have been made inside and outside of this mine during the year. A new brick engine house has been built, a first motion hoisting engine has taken the place of the old one, the tail rope system of haulage has been introduced, length of haul eight hundred feet, an out grade of 18″ in 100′. The engine is placed

near the bottom of the shaft, size of engine cylinders, 18″x30″ steam pressure seventy-five pounds. The drums are 4½ feet in diameter, ropes ⅝″. It is the intention to extend the rope haul whenever it becomes necessary. The shaft bottom has been remodeled and timbered with double notched timber and altogether it is a very neat and substantial piece of work. The average amount of air in circulation per minute is 49,107 cubic feet. This volume is divided and circulated to the face of all the headings and the mine is kept in first-class condition. Mining-boss, John Duncan.

No. 1 "B" shaft.—This mine is kept in reasonable condition with an average of 27,507 cubic feet of air in circulation per minute. On my last visit to this mine they were drawing ribs and they had to resort to the use of the Clanny safety lamp on account of fire-damp generating of the falls. Mining-boss, Charles Watson.

No. 2 Mine.—This mine is kept up fully to the requirements of the law, with an average of 20,650 cubic feet of air in circulation per minute. The distribution of this volume is well attended to. The drainage is all right. Mining-boss, William Kooser.

Alice or No. 3 mine.—This mine is kept in a healthy condition. The average quantity of air in circulation is 55,882 cubic feet per minute. The distribution of this volume to the face of the workings is well attended to, and the drainage of the mine is fair. Mining-boss, James Wardley.

No. 4 mine.—I did not find this mine in good condition at all times, as there is considerable black-damp generated in the mine, and there was not sufficient air to keep the mine in a healthy condition at all seasons of the year, the average quantity of air in circulation per minute is 10,092 cubic feet. An air shaft has been sunk between Nos. 2 and 4 mines and it is the intention in the spring to erect a large fan to ventilate both of these mines. Mining-boss, Robert Morris.

United.—This mine has been kept in a reasonably fair condition during the year. The average quantity of air in circulation per minute is 52,110 cubic feet. This quantity was fairly distributed through the mine. The drainage is fair. On the morning of the 26th of December a fire originated in the mule stable near the bottom of the shaft, which was caused by the careless handling of a carbon oil can. The fire was communicated to the hoisting shaft at once, and before the men could be gotten out by the air shaft, everything was burned down on top of the hoisting shaft; all the mules were smothered, and many of the men narrowly escaped the same fate. The pernicious practice of taking large quantities of carbon oil into the mines in the coke region was permitted at this shaft, and we may look for the same thing to happen again if the carbon oil is not entirely excluded from the mine. The mine had to be sealed up and flooded, and it will be several months before work will be resumed in it. Mining-boss, William West.

Westmoreland Gas Coal Company Mines.

Westmoreland shaft.—This mine is well managed and always kept in good condition. The average quantity of air in circulation per minute is 69,122 cubic feet. This volume is well distributed and circulated to to the face of headings. Mining-boss, James Thompson.

South Side.—This mine is well looked after and kept in good condition. The average quantity of air in circulation is 80,670 cubic feet per minute. 45,000 cubic feet goes to supply the locomotive, leaving 35,670 cubic feet for the miners. The drainage is also good. Mining-bosses, George Carroll and John Williams.

Larimer No. 3.—This mine has not always kept up to the requirements of the ventilation law. I have measured on an average 27,590 cubic feet going out at the outlet per minute. On my last visit, December 30, I only measured 12,420 cubic feet going out. The mine is a difficult one to ventilate, on account of the strata breaking through into the surface so frequently, leaving an avenue for the air to escape. Notwithstanding this, with proper attention on the part of the mining-boss, it could be made better. Mining-boss, Arthur Fowler.

Larimer No. 4.—This mine has only worked a short time this year. On my visit I found it in good condition. I measured 39,420 cubic feet of air going in at the inlet per minute. The distribution was fair. 139 persons are employed in the mine. Mining-boss, George Carroll.

West Overton.—The general condition of this mine is fair, considering that the mine is ventilated by natural means. The mine is favorably situated for natural ventilation at present, but when it becomes necessary a furnace will have to be built. Average quantity of air in circulation per minute was 6,430 cubic feet. Drainage fair. Mining-boss, John Boyle.

West Newton shaft.—Important improvements have been made in this mine during the year. The air-shaft mentioned in last year's report was completed, and a fan 20 feet in diameter was placed on it to exhaust the air from the mine; size of engine cylinder 12″x24″. The fan, making 46 revolutions per minute, produces 33,600 cubic feet. The fan can be speeded up at any time if it becomes necessary. An escape shaft was sunk near the boundary line, and is fitted up with stairs, so that the miners can escape in case of an accident to either of the other two shafts. The mine is now in a healthy and safe condition. Mining-boss, Robert Hall.

Weiuman.—On my last visit to this mine there was only 9 persons working in it. The ventilation was not very good on that day, and the mine did not come under the provisions of the law.

Youghiogheny shaft.—This mine is in a healthy condition. The average amount of air in circulation is 26,507 cubic feet per minute; the distribution of this volume is well attended too. The drainage is all right. Mining-boss, James Collins.

Yough slope.—The condition of this mine has not been satisfactory during the year. Another opening was made for air near the face of the workings. The furnace is too far away, and there is no depth of shaft, therefore the furnace has no control over the ventilation. The mine is generating considerable fire-damp, and a fan would be far better and more economical for ventilation. The drainage is fair. Mining-boss, James Latimore.

Yough Valley.—The ventilation is defective in this mine. The furnace is too far away, and has no power over the ventilation; on July 12, I found a large quantity of standing gas on top of a fall, and I gave orders to move it at once, which was done. I have ordered an air shaft to be sunk, and they have promised to have it done at once. The average amount of air in circulation per minute is 10,880 cubic feet, just half enough. Mining-boss, Joseph Gartley.

TABLE I—*Showing location of Collieries in the Second Bituminous Mine District.*

Name of Colliery	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Alexandria	Alexandria Coal Company	Westmoreland county	Thomas Donohoe	Greensburg, Westmoreland county.
Alice No. 2	South West Coal and Coke Company	" "	Morris Ramsay	Mt. Pleasant, Westmoreland county.
Arnold	Arnold Coal Company	" "		Burrell, Westmoreland county.
Amieville		" "	S. H. Grace	Suterville, Westmorland county.
Armstrong		" "		Youghiogheny, Westmoreland county.
Bessemer	McClure & Co.	" "	James Devlin	Mt. Pleasant, Westmoreland county.
Buckeye	" "	" "	J. P. Brennen	Scottdale, Westmoreland county.
Central	Central Connellsville Coke Company	" "	William C. Reynolds	Tarr's, Westmoreland county.
Carbon	Carbon Coal Company	" "	Frank I. Kimball	Greensburg, Westmoreland county.
Calumet	Calumet Coke Company	" "	S. M. Hankins	Calumet, Westmoreland county.
Denmark	Manor Gas Coal Company	" "	A. P. Cameron	Claridge, Westmoreland county.
Donnelly Nos. 1 and 2	McClure & Co.	" "	Peter P. Glenn	Stoners, Westmoreland county.
Dilworth	William P. Dillworth	" "	Thomas Whitman	Frank P. O., Allegheny county.
Duquesne	Corey Coal Company	Allegheny county	William L. Dixon	Swissvale, Allegheny county.
Emma	Maria F. Overholt	Westmoreland county	J. W. Overholt	Scottdale, Westmoreland county.
Eureka	Stoner & Co.	" "	William McCune	West Newton, Westmoreland county.
Frankstown	Jacob Weinman	Allegheny county	Jacob Weinman	Wilkinsburg, Allegheny county.
Greensburg	Greensburg Coal Company	Westmoreland county	A. W. Jones	Greensburg, Westmoreland county.
Graver	New York and Cleveland Gas Coal Co.	Allegheny county	William Fisher	White Ash, Allegheny county.
Hampton	Hampton Coal Company	" "	Major Lawton	Wilkinsburg, Allegheny county.
Hempfield	Hempfield Coal Company	Westmoreland county	A. W. Jones	Greensburg, Westmoreland county.
Hazlett Nos. 1 and 2	McClure & Co.	" "	J. P. Brennan	Scottdale, Westmoreland county.
Hecla No. 1	Hecla Coke Company (Limited)	" "	Thomas Laird	South West, Westmoreland county.
Hecla No. 2	" " " "	" "	" "	Tranger, Westmoreland county.
Lucesco	Leechburg Coal and Coke Company	" "	W. H. Wray	Leechburg, Armstrong county.
Larimer Nos. 3 and 4	Westmoreland Coal Company	" "	George R. Scull	Irwin, Westmoreland county.
Lippencott	Hostetter Coke Company	" "	Frank Friend	Hostetter P. O., Westmoreland county.
Manor Shaft	J. L. Stephenson	" "	Samuel Furguson	Harrison City, Westmoreland county.
Mutual Nos. 1, 2 and 3	The Mutual Coke Company	" "	Robert S. Jamison	Greensburg, Westmoreland county.
Mammoth Nos. 1 and 2	H. C. Frick Coke Company	" "	Fred. C. Keighley	Mammoth, Westmoreland county.
Mayfield	McClure & Co.	" "	Peter P. Glenn	Stoners, Westmoreland county.
Mullin	" "	" "		Mt. Pleasant, Westmoreland county.
No. 1 "A" shaft	South West Coal and Coke Company	" "	Morris Ramsay	" " "
No. 1 "B" shaft	" " " "	" "	" " "	" " "
No. 3	" " " "	" "	" " "	" " "
No. 4	" " " "	" "	" " "	Greensburg, Westmoreland county.
Madison	Madison Gas Coal Company	" "	Thomas Donohoe	Greensburg, Westmoreland county.
Ocean	George Vogele	Allegheny county	George Vogele	Wilkinsburg, Allegheny county.
Osceola	Osceola Coal Company	" "	James W. Shields	Emblem, Allegheny county.
Oak Hill No. 4	New York and Cleveland Gas Coal Co.	" "	T. B. DeArmit	Turtle Creek, Allegheny county.
Ocean No. 1	Youghiogheny River Coal Company	Westmoreland county	John F. Hosack	Scott Haven, Westmoreland county.
Penn gas, No. 1 shaft	Penn Gas Coal Company	" "	John F. Wolf	Irwin, Westmoreland county.
Penn gas, No. 2 shaft	" " " "	" "	" "	" " "
Penn gas, No. 3 shaft	" " " "	" "	" "	" " "
Penn gas No. 4	" " " "	" "	" "	" " "
Penn gas drift	" " " "	" "	" "	" " "
Penn gas slope	" " " "	" "	" "	" " "
Penn gas, Coal Run	" " " "	" "	" "	" " "
Port Royal	Port Royal Coal and Coke Company	" "	Isaac Brown	Fitz Henry, Westmoreland county.
Plum Creek	New York and Cleveland Gas Coal Co.	Allegheny county	T. B. DeArmit	Turtle Creek, Allegheny county.

TABLE I *Continued.*

NAME OF COLLIERY.	Name of operator.	Location County.	Name of superintendent.	Postoffice address.
Robbins	Robbins Coal Company	Westmoreland county	William A. Brandt	Scott Haven, Westmoreland county.
Republic	Republic Coal Company	" "	J. J. Zwirdinger	111 Fourth avenue, Pittsburgh, Pa.
Rising Sun	McClure & Co.	" "	James Devlin	Mt. Pleasant, Westmoreland county.
Standard No. 1	H. C. Frick Coke Company	" "	Robert Ramsay	" " "
Standard No. 2	" " "	" "	" "	" " "
Standard slope	" " "	" "	" "	" " "
Smithton No. 1	Waverly Coal and Coke Company	" "	William McCune	Smithton, Westmoreland county
Smithton No. 2	" " " "	" "	" "	" " "
Southside	Westmoreland Coal Company	" "	George R. Seull	Irwin, Westmoreland county.
Shaner No. 1		" "	G. W. Schuelderberg	Penn building, Pittsburgh, Pa.
Shaner No. 2		" "	" "	" "
Springhill Nos. 1 and 2	Spring Hill Gas Coal Company	Allegheny county	E. W. Boyd	Turtle Creek, Allegheny county.
Sandy Creek	New York and Cleveland Gas Coal Co.	" "	William Fisher	White Ash, Allegheny county.
Union	McClure & Co.	Westmoreland county	J. P. Brennen	Scottdale, Westmoreland county.
United	United Coal and Coke Company	" "	William C. Reynolds	United, Westmoreland county.
Westmoreland shaft	Westmoreland Coal Company	" "	George R. Seull	Irwin, Westmoreland county.
West Newton shaft	West Newton Coal Company	" "	A. W. Osborne	West Newton, Westmoreland county.
West Overton	A. C. Overholt & Co.	" "	B. F. Overholt	West Overton, Westmoreland county.
Whitney	The Hostetter Coke Company	" "	John T. Rush	Whitney, Westmoreland county.
Weinman	Weinman & Co.	Allegheny county	Jacob Weinman	Wilkinsburg, Allegheny county.
Yough slope	Yough Slope Gas Coal Company	Westmoreland county	Robert H. Latimore	West Newton, Westmoreland county.
Youghiogheny	Ohio and Pennsylvania Coal Company	" "	James Watkins	Fitz Henry, Westmoreland county.

TABLE II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Second Bituminous Mining District for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Alexandria	Goff, Westmoreland county	250,323	123,169	65,570	304	330	1	2	....	3	31	..	293
Amieville	Suterville, Westmoreland county	71,928.18	.....	71,928.009	240	142	....	....	....	1	17	..	....
Alice	Mount Pleasant, Westmoreland co.												
Bessemer and Rising Sun	" "	170,000	113,000	.....	283	226	....	2	....	3	33	..	273
Buckeye	Stauffers, Westmoreland county	80,607	53,738	.....	291	137	....	....	....	5	16	..	160
Blythe	Robbins, Westmoreland county	3,592.500	.....	2,392	40	52	....	....	....	....	3	..	....
Central	Tarr's, Westmoreland county	165,000	110,000	.....	252	259	....	4	....	5	21	..	301
Carbon	Greensburg, Westmoreland county	177,648	24,874	132,444	283	213	....	3	....	4	21	..	48
Calumet	Calumet, Westmoreland county	162,000	109,000	.....	259	231	....	2	....	6	21	..	225
Donnelly, Nos. 1 and 2	Stoner's, Westmoreland county	123,000	81,000	.....	282	122	....	....	25	2	15	..	200
Dilworth	Scott Haven, Westmoreland county	50,760	.....	50,760	240	113	....	....	....	....	5	..	....
Denmark	Claridge, Westmoreland county	129,223.13	.....	129,223.650	210	225	1	1	....	3	12	..	....
Duquesne	Wilkinsburg, Allegheny county	80,571	.....	80,571	229½	153	....	....	....	2	11	1	....
Emma	Hogg's, Westmoreland county	19,565	14,023	.....	263	23	....	....	....	1	3	..	36
Eureka	Jacob's Creek, Westmoreland co.	75,000	.....	70,000	260	111	....	3	....	1	5	..	....
Enterprise	Hawkeye, Westmoreland county	33,000	22,000	.....	276	34	....	....	4	1	6	..	51
Greensburg	Greensburg, Westmoreland county	114,996	5,249	104,019	267	109	....	6	....	1	16	..	10
Hampton	Wilkinsburg, Allegheny county	24,173	.....	24,173	86	176	....	....	....	....	18	..	....
Hempfield	Greensburg, Westmoreland county	148,173	.....	145,123	252	128	1	....	....	5	20	..	....
Hazlett, Nos. 1 and 2	Mt. Pleasant, Westmoreland county	147,000	98,000	.....	280	211	....	....	....	7	21	..	261
Hecla No. 1 shaft	South West, Westmoreland county	152,149.796	101,403.150	.....	234	255	....	....	4	8	34	..	272
Hecla No. 2 shaft	Tranger, Westmoreland county	97,919.350	61,316.600	.....	268	260	1	....	2	6	22	..	300
Larimer Nos. 3 and 4	Larimer, Westmoreland county	154,026	.....	153,667	144	314	1	1	....	4	19	..	....
Lippincott	Hostetter, Westmoreland county	25,725	17,152	.....	143	162	....	....	....	2	7	..	292
Larimer Coke plant	Larimer, Westmoreland county	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	300

TABLE II—*Continued.*

NAME OF COLLIERIES.	Location	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number of days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number of coke ovens.
Mutual Nos. 1, 2 and 3.	Mutual, Westmoreland county,	115,500	65,000	8,825	260	176		2	100	2	20		154
Mammoth Nos. 1 and 2.	Mammoth, Westmoreland county,	341,964	219,033		267	521	3			12	30		509
Mayfield.	Stoner's, Westmoreland county,	53,000	35,000		282	43		1	5	1	5		104
Mullin.	Mt. Pleasant, Westmoreland co.,	54,000	36,000		282	82		1		1	7		82
Madison.	Madison, Westmoreland county,	24,815		24,815	87	137					2		
Nos. 1, "A" and "B" shafts.	Mt. Pleasant, Westmoreland county,	540,110	361,810		295	614	1	2		10	48		620
No. 3 drift and shaft.	Tarr's, Westmoreland county,	209,908	139,966		285	187				4	22		180
No. 4 drift.	Stoner's, Westmoreland county,	78,923	52,322		297	104				4	11		100
No. 2 slope.	Mt. Pleasant, Westmoreland county,	151,775	101,386		299	242				2	25		251
Ocean No. 1.	Scott Haven, Westmoreland county,	115,546		115,546	195	182	1	1	125		17		25
Osceola.	Osceola, Allegheny county,	80,633		80,633	200	130		3	120	2	8		
Oak Hill, No. 4.	Turtle Creek, Allegheny,	79,391		79,391	75	322				4	14		
Penn Manor shaft.	Manor Station, Westmoreland co.,	81,288		81,281	244	132				1	5		45
Plum Creek.	Negley, Allegheny county,	153,722		153,722	288	180	1	1			27		
Port Royal.	Fitz Henry, Westmoreland county,	73,950	14,717	58,046	256	82	1		500	8	11		60
Penn Gas No. 1.	Irwin, Westmoreland county,	137,986		132,765	185	302	2	2		5	18		
Penn Gas No. 2.	" " "	133,686		127,629	171	300		3		4	34		
Penn Gas Coal Run.	" " "	26,927		26,040	217	80					5		
Penn Gas No. 4.	Sewickley, Westmoreland county,	67,556,500		67,245	83	276	1			2	20		
Robbins.	Robbins, Westmoreland county,	37,554		37,559	125	94		1	48		5		
Republic.	Sewickley, Westmoreland county,	8,711.6		8,711.6	86	40		1	4	1	5		
Standard No. 2, shaft.	Mt. Pleasant, Westmoreland county,	534,165	585,367		248	902				20	70		905
Standard slope.	" " "	51,202											
Smithton Nos. 1 and 2.	Smithton, Westmoreland county	92,039	27,111	46,854	218	198	2	2	425	5	17		117
Shaner No. 2.	Guffy, Westmoreland county,	83,506		83,506	185	151		2		2	8		
South Side.	Irwin, Westmoreland county,	121,991		120,313	126	346				3	19	1	
Spring Hill Nos. 1 and 2.	Wall's, Allegheny county,	76,000		76,000	313	108				1	6		
Sandy Creek.	Sandy Creek, Allegheny county,	159,657,500		159,657,500	263	253			40	2	17	1	
Union.	Stoner's, Allegheny county,	39,000	26,000		281	52				1	7		70
United.	United, Allegheny county,	250,000	150,000		252	322				8	18		300

West Overton.	West Overton, Allegheny county.	64,201	45,429	156,868	265	86	. . .	. . .	. . . .	. . . .	1	4	. . .	110
Westmoreland shaft.	Biddle, Allegheny county.	165,071	. . . .	62,441	142	345	1	2	. . . .	. . . .	12	16	. . .	. . .
West Newton shaft.	West Newton, Allegheny county.	62,441	. . . .	. . . .	240	108	. . .	1	. . . .	. . . .	4	4	. . .	. . .
Whitney.	Whitney, Allegheny county.	120,000	85,000	. . . .	. . .	310	1	1	. . . .	. . . .	2	19	. . .	302
Westmoreland Car Shops.	Irwin, Allegheny county.	. . . .	. . . .	. . . .	102	40	. . .	. . .	. . . .	. . . .	. . .	. . .	. . .	. . .
Wehrman.	Wilkinsburg, Allegheny county.	5,180	. . . .	5,180	200	10	. . .	. . .	. . . .	. . . .	. . .	. . .	. . .	. . .
Yough slope.	West Newton, Westmoreland co.	59,422	. . . .	59,422	265	111	. . .	1	. . . .	225	4	8	. . .	. . .
Youghlogheny shaft.	Fitz Henry, Westmoreland county.	36,088	3,325	31,700	269	76	. . .	. . .	1	. . . .	3	6	. . .	25
Yough Valley.	Robbins, Westmoreland county.	33,790	. . . .	32,191	85	132	. . .	. . .	. . .	. . . .	. . .	10	. . .	. . .
Total,		6,975,879,550	2,781,390,750	2,866,432,350	13,417	11,704	20	51	1,627	265	954	3	6,971

TABLE III.—*Showing the number of each class of employes at each colliery in the Second Bituminous Mine District during the year 1890.*

NAMES OF COLLIERIES.	Location—County	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Number of cokers and yard men employed.	All company men.	Superintendent, bookkeepers and clerks.	Total outside.	
Alexandria	Goff, Westmoreland co.	1	190	8	6	17	7	229	4	4	3	78	10	2	101	330
Amieville	Suterville	1	100	14	3	11	4	133	1	2	2		2	2	9	142
Alice	Mt. Pleasant															
Bessemer and Rising Sun		1	87	2	9	15	8	122	1	3	3	75	20	2	104	226
Buckeye	Stauffer's	1	56		4	11	1	73	1	2	1	18	6	3	61	137
Blythe	Robbins	1	40		3	3		47	1	1			2	1	5	52
Central	Tarr's	1	98	2	17	13	5	136	1	5	4	104	7	2	123	259
Carbon	Greensburg	1	143	5	15	10		174	2	3	5	12	15	2	39	213
Calumet	Calumet	1	105		7	13	4	130	1	4	3	76	15	2	101	231
Dilworth	Scott Haven	1	80	4	13	4	1	103	1	1			6	2	10	113
Donnelly Nos. 1 and 2	Stoner's	1	55	7	3	8	4	78	1	3	1	32	4	3	44	122
Denmark	Claridge	1	170	7	8	14	7	207		2	4		9	3	18	225
Duquesne	Wilkinsburg, Allegh'y co.	1	115	15	3	7	2	143	1	2	2		4	1	10	153
Emma	Hogg's, Westmorel'd co.	1	9		1	2		15	1			7		2	10	25
Eureka	Jacob's Creek	1	80	6	7	6	3	103	1	4	1			2	8	111
Enterprise	Hawkeye	1	14		1	4		20	1	1		9	1	2	14	34
Greensburg	Greensburg	1	77		3	12	3	96	1	2	2	2	5	1	13	109
Hampton	Wilkinsburg, Allegh'y co.	1	120	20	10	8	4	163		3	1		7	2	13	176
Hempfield	Greensb'g, Westmorel'd co	1	90	3	3	12	3	112	1	2	3		9	1	16	128
Hazlett Nos. 1 and 2	Mt. Pleasant	1	80		15	10	4	110	2	2	5	80	10	2	101	211
Hecla No. 1 shaft	South West	1	114	1	14	19	9	158	2	5	5	73	8	3	97	255
Hecla No. 2 shaft	Tranger	1	120	2	12	11	10	156	2	5	5	74	16	2	104	260
Larimer Nos. 3 and 4	Larimer	1	240	4	28	19	3	295	1	1	2		13	2	19	314
Lippencott		1	75	3	7	8	2	96	1	4	4	49	6	2	66	162
Mutual Nos. 1, 2 and 3	Mutual	1	80	9	3	8	2	103	2	2	2	60	5	2	73	176
Mayfield	Stoner's	1	18	4	1	3	1	28	1		1	10	2	1	15	43
Mammoth Nos. 1 and 2	Mammoth	2	200		43	25	18	288	4	8	8	160	52	3	233	521
Mullin	Mt. Pleasant	1	28		2	5		36	1	1	1	39	2	2	46	82
Madison	Madison	1	104	5	2	9	2	123	1	2			10	1	14	137
Nos. 1 "A" and "B" shafts	Mt. Pleasant	2	235		12	24	10	283	2	11	7	260	45	6	331	614
No. 3 drift and shaft	Tarr's	1	74	1	10	13	5	104	1	2	4	65	9	2	83	187
No. 4 drift	Stoner's	1	34		4	6	1	46	1	1	3	48	5		58	104
No. 2 slope	Mt. Pleasant	1	95	2	10	14	7	129	1	3	3	100	5	1	113	242

Ocean No. 1	Scott Haven,	1	143	12	3	10	1	170	1	3			6	2	12	182
Osceola,	Osceola, Allegheny co.,	1	96	8	4	6		115		2	2		7	4	15	130
Oak Hill No. 4,	Turtle Creek, Allegh'y co.,	1	210	50	4	16	2	283	1	3	4		28	39	3	322
Penn Manor shaft,	Manor St'n, Westm'd co.,	1	100	3	6	6	2	118		1	3		9	1	14	132
Plum Creek,	Negley, Allegheny co.,	1	130	14	5	14		164		2			14	2	16	180
Port Royal,	Fitz Henry, Westm'd co.,	1	40		5	5	4	55	1	4	5	10	5	2	27	82
Penn Gas No. 1 shaft,	Irwin,	1	230	9	14	17	4	275	1	3	5		18		27	302
Penn Gas No. 2 shaft,	"	1	214	9	12	23	6	265	1	4	4		24	2	35	300
Penn Gas Coal Run,	"	1	52	3	5	4	3	68	1	2			8	1	12	80
Penn Gas No. 4,	Sewickley,	1	212	12	9	14	6	254	1	4	2		14	1	22	276
Robbins,	Robbins,	1	70	5	4	5	1	86	1	1			5	1	8	94
Republic,	Sewickley,	1	25	3		6		35		1			2	2	5	40
Standard No. 2 shaft & slope,	Mt. Pleasant,	2	375	10	55	42	17	501	3	10	17	330	36	5	401	902
Smithton Nos. 1 and 2,	Smithton,	2	104	4	11	11	4	136	1	3	3	31	22	2	62	198
Shaner No. 2,	Guffey,	1	120	8	3	6	2	140	1	1	2		5	2	11	151
South Side,	Irwin,	2	268	14	19	19	2	324	1	4	3		13	1	22	346
Spring Hill Nos. 1 and 2,	Wall's, Allegheny county,	1	87	4	1	6		99		1	1		6	1	9	108
Sandy Creek,	Sandy Creek, Allegh'y co.,	1	150	22	43		2	218	1	3	4		25	2	35	258
Union,	Stoner's, Westmorel'd co,	1	19		2	3		25	1			24		2	27	52
United,	United,	1	140		8	17	17	183	1	4	7	108	17	2	133	322
Westmoreland shaft,	Biddle,	1	251	8	40	16	3	319	1	3	5		16	1	26	345
West Overton,	West Overton,	1	36	3	2	4		46	1	1	1	32	1	4	40	86
West Newton shaft,	West Newton,	1	80	3	9	4	3	100	1	1	2		3	1	8	108
Whitney,	Whitney,	1	150		13	7	6	177	2	5	4	105	15	2	139	310
Weinman,	Wilkinsburg, Allegh'y co.,		8			1		9						1	1	10
Westmoreland Car Shops,	Irwin,								2	9	1		28		40	40
Yough Slope,	West Newton,	1	80	6	5	8	1	101	1	1	3		4	1	10	111
Youghiogheny shaft,	Fitz Henry,	1	50	3	1	4	1	60	1	1	2	5	5	2	16	76
Yough Valley,	Robbins,	1	100	10	3	8	2	124	1	1			4	2	8	132
Total,		64	6,666	347	565	626	219	8,487	69	167	169	2,106	650	116	3,277	11,764

TABLE IV.—*List of Fatal Accidents occurring in and about the mines of the Second Bituminous District for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
Dec. 31, '89.	Andrew Petras.	Miner.	45	1	2	Port Royal.	Westmoreland.	Petras was a Hungarian miner and had been mining coal for some years. He was so severely injured by a fall of slate that his arm and leg had to be amputated, and he died on January 1, 1890. I investigated the accident and discovered that he did not have sufficient posts under the slate to keep it up. An inquest was held on his body and a verdict of accidental death was rendered.
Jan. 2.	John Lambert.	"	29	S.	..	Yough slope.	"	Lambert was a German miner and had mined coal for eight or nine years. He was instantly killed by a fall of slate. At the time of the accident he was loading a wagon, and, I suppose, he did not heed the loose slate that was hanging over him until it fell. An inquest was held on his body and a verdict of accidental death was rendered.
Dec. 27, '89.	John Flaherty.	"	46	1	5	Penn shaft No. 1.	"	Flaherty was an Irish miner and had mined coal for many years. He was so severely injured on the back by a fall of slate that he died on January 6, 1890.
Jan. 25.	John Davidson.	"	54	S.	..	Larimer No. 3.	"	Davidson was an Irish miner. He had been mining coal for many years. At the time of the accident he was sitting down "bearing-in," when a fall of body coal fell on him, injuring him so severely that he died in a few hours.
" 23.	John Tomik.	"	31	1	..	Westmoreland shaft.	"	Tomik was a Bohemian miner. He was so severely injured by a fall of slate that he died three days afterwards. He had just fired a shot in the coal the evening before, and on the morning of the accident he had filled two wagons of coal from the shot, taking no notice of the slate and not setting a post under it, which he should have done; by so doing, the probabilities are that the accident could have been prevented.
Feb. 14.	Mark Parkins.	..	43	1	4	Smithton No. 2.	"	Parkins was an English miner and had spent most of his days in the mines. He was instantly killed by a fall of slate. He had a large quantity of slate posted up; it was strong limestone slate and considered safe. His brother had been with him half an hour before the accident helping him to fire a shot. He stated that the place was safe at that time. On investigation I discovered that he had got into free slate and on his sounding it, the slate fell with the above results.

April	25,	Thomas Masark,	"	35	S.		Penn Gas No 4.	"		Masark was an Italian miner. He was instantly killed by a fall of slate. It appeared to me, when I examined the place where he was working, that he had been knocking a post out and he fell forward under the slate, with the above result. An inquest was held on his body and a verdict of accidental death was rendered.
	25,	Frank Mydltch,	"	27	S.		Denmark,	"		Myditch was a German miner and he had only been mining coal a short time. He was so seriously injured by a fall of "horseback" that he died in four hours. The roof had the appearance of being all right just before it fell. This shows that men should be careful in examining their places.
May	21,	James Kelly,	"	35	S.		Alexandria,	"		Kelly was an Irish miner. He had been mining coal for many years. He was fatally injured by a fall of coal. He lived one week after the accident, and he condemned himself for getting under the loose coal. He said that he did not know why he got under the coal, and that he would have warned any one else of the danger.
June	3,	Thomas Brown,	"	40	S.		Hempfield,	"		Brown was a Scotch miner and had been in the mines for many years. He was instantly killed by being caught between a wagon and rib as he was bringing his wagon from the face of the room to the parting. An inquest was held on his body and a verdict of accidental death was rendered.
	4.	Michael Hytiez,	"	35	1	5	Hecla No 1 shaft,	"		Hytiez was a Hungarian miner. He had not mined coal many years. He was instantly killed by a fall of roof coal and rock as he was drawing entry stumps. The driver had given him an empty wagon a short time before the accident and had told him not to load it as he did not consider the place safe. It seems that he paid no attention to the driver but went on with his work, with the above result. His wife and children are in Hungary. An inquest was held on his body and a verdict of accidental death was rendered.
July	28.	Michael Popowich,	Driver,	27	1	1	No. 1 "B" shaft,	"		Popowich was a Hungarian driver. He was fatally injured by going through a chute in order to get ahead of the other driver. He died the next day. His death was caused by his own carelessness.
Aug.	13,	Robert Ferguson,	Miner,	23	S.		Ocean No. 1,	"		Ferguson was an English miner. He had spent his life in the mines. He was fatally injured by a fall of slate and died on the 15th. He was shoveling coal from under the slate when it fell on him. By a little more care on his part, I suppose, the accident would have been averted.
	19,	John Garlick,	"	39	1	1	Mammoth slope,	"		Garlick was a Hungarian miner. He was instantly killed by a fall of slate as he was drawing post in the stumps. If he had taken a little more care the accident in all probability would not have happened.
	26,	Joseph Hoodets,	"	30	S.		Mammoth shaft,	"		Hoodets was a Bohemian miner. He was drowned in the dip workings of the mine and his body was not reached until September 14. Part of the mine caved in, caused by a heavy fall of rain on August 26, and soon filled up the dip. All the men came out with the exception of this man. He was told to come out but did not heed the warning given him.
Oct.	15,	Frank Tungo,	"	16			Penn shaft No. 1,	"		Tungo was an Italian miner. He had only been in the mine a short time. He was fatally injured by falling off the cage. He died in the West Penn hospital on the 24th. An inquest was held on his body in the courthouse in Pittsburgh. There were seven other Italians on the cage with him, but neither of them could tell how he fell off.

TABLE IV- *Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
Nov. 5.	Nanie Bemmua. . . .	Miner. . . .	28	. .	. .	Plum Creek.	Allegheny. . . .	Bemmua was an Italian miner. He had only mined coal for three months. He was instantly killed by a fall of slate. I found on examination that there was slate up all across his room and he only had one post set under it, when he should have had three at least. There were plenty of posts in his room. I don't believe that he was sufficiently acquainted with the dangers of mining or he would not have taken the risk that he did.
Dec. 8.	William Beckner. .	Not working.	16	. .	. .	Mammoth.	Westmoreland. . .	This boy came to see his brother-in-law and he jumped on the larry on the coke ovens. His brother-in-law told him to go home and he did so, but in an hour he came back again and jumped on the larry again and fell with both arms under the wheels, and they were crushed so badly that they were obliged to be amputated, and he died three days afterwards.
23.	Fredrick Kalawinsky.	Driver. . . .	18	. .	. .	Whitney.	" . .	Kalawinsky was a Polander. He was fatally injured by being caught between wagons and a rib and he died on the 29th, six days after the accident.
24.	Henry Pott.	Miner. . . .	35	1	3	Smithton No. 1. . . .	" . .	Pott was a German miner and had mined coal for some years. He had lately come here from the anthracite regions and not being used to this coal he spragged the coal up with an old rotten board and sat down to bear-in under it, when two tons and half of coal fell on him, killing him instantly. The coroner held an inquest on his body and a verdict of accidental death was rendered.

TABLE V—*List of Non-Fatal Accidents occurring in and about the mines of the Second Bituminous Mine District, for the year ended Debember 31, 1890.*

Date of accident.	NAME OF PERSON	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 3.	Charles McCafferty	Miner	35	M	3	Alexandria	Westmoreland	Foot mashed by a fall of coal.
4.	Thomas Mochooky	"	30	"		Bessemer	"	Injured by a fall of slate.
7.	Oliver Chambers	"	62	"		Greensburg	"	Ankle bone fractured by a fall of slate.
8.	Valentine Faracosh	Driver	25	"		Bessemer	"	Injured by being caught between a wagon and rib.
14.	John Durling	Miner				Penn shaft No. 1	"	Had two of his ribs broken by a fall of slate.
14.	John King	"	24	S.		Greensburg	"	Had his head cut and bruised by a fall of coal.
15.	James Graig	Laborer	42	M.		Shaner No. 2	"	Thumb broken while coupling cars outside.
21.	Henry Heholt	Miner	40	"		Osceola	Allegheny	Slightly injured while cutting a post on the gob.
22.	Joseph Hamilton	"	25	S.		Republic	Westmoreland	Slightly injured by a fall of slate.
29.	Herbert McDermitt	"	16	"		Westmoreland shaft	"	Ankle fractured by a fall of slate.
30.	Jacob Kohl	"	57	M.		Denmark	"	Collar bone fractured by a fall of slate.
31.	Fred. Diker	"	64	W.		Smithton No. 1	"	Had his ankle dislocated and was otherwise injured by being caught on the dilly road.
Feb 2.	L. K. Klinglesmith	Engineer	26	M.		Carbon		Had three of his fingers mashed by a steam pipe falling on them: the fingers were amputated.
25.	David F. Keno	Miner	40	S.		Larimer No. 3	"	Back injured by a fall of slate.
27.	John Swkey	Rope rider	22	"		Eureka	"	Slightly injured on the head by being struck by a trip of wagons.
28.	Noah Henry	Laborer	35	M.		Westmoreland shaft	"	Foot seriously injured by cars outside of the mine.
28.	Charles Drummer					Plum Creek	Allegheny	Leg and two ribs injured by being caught between two wagons.
Mar. 1.	Andy Funk	Driver	26	S.		Calumet	Westmoreland	Leg broken by being caught between loaded wagons.
Apr. 9.	George F. Greene	Miner	36	M.		Eureka	"	Ankle dislocated by a fall of slate.
18.	Thomas Hughes	"	40	"		Penn shaft No. 2	"	Leg cut by a wagon running over it.
19.	William Morris	"	18	S.		" "	"	Arm severely injured, necessitating amputation, caused by jumping on a full trip of wagons and falling under them.
23.	Stephen Hurait	Laborer	22	"		Whitney	"	Leg and arm broken and chest crushed by falling under a wagon.
May 12.	William Miller	Miner	23	"		Greenburg	"	Arm broken by a fall of slate.
14.	William Patrusfoo	"	30	"		Central	"	Leg broken by a post falling on it.
June 10.	Andrew Tatmoka		26	M.		"	"	Bruised by being caught between the bumpers of a wagon.
10.	H. E. Biggle	Miner	16	S.		Carbon	"	Knee injured by jumping on the full wagons.
14.	T. R. Householder	"	24	M.		Greensburg	"	Head injured and skull fractured by being caught between a rib and a fall of coal
30.	William Ringler	"	45	"		No. 1. A shaft	"	Three ribs broken by being caught between the empty trip and the rib.
July 16.	William Wallace	"	29	"		Mutual No. 3	"	Back and hips severely bruised by being caught by a fall of roof coal.
22.	John Snyder	"	50	"		Ocean No. 1	"	Leg broken by a fall of coal.
23	Henry King	"	23	S.		Greensburg	"	Hip fractured by a fall of slate.
24.	Charles July	"	30	"		Shaner No. 2	"	Spine injured by a fall of slate.

TABLE V—*Continued.*

Date of accident	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery	Location county.	Nature and cause of accident.
Aug. 2.	John Klmeamp.	Miner.	27	M.		Osceola.	Allegheny.	Foot severely injured by a fall of coal.
20.	James Clark.	"	35	"		Carbon.	Westmoreland.	Back injured by a fall of slate.
29.	Edward Roland.	Driver.	29	"		West Newton shaft.	"	Leg injured while coupling wagons.
Sept. 11.	Robert Copeland.	Miner.	35	"		Robbins.	"	Bruised across the back by a fall of slate.
25.	Liseo King.	Rope rider.	21	S.		No. 1, A shaft.	"	Rib broken by being caught between wagons.
Oct. 6.	Joseph Smoda.	Miner.	26	"		Youghiogheny.	"	Burned by fire-damp in an entry.
16.	A. Kasparick.	"	45	"		Penn shaft No. 2.	"	Leg broken while drawing a post.
17.	Thomas Lancaster.	"	50	M.		Eureka	"	Leg bruised by a fall of slate.
22.	Frank Rehannick.	"	15	S.		Central.	"	Both legs broken, hip bone dislocated and body bruised; he jumped on the full wagons and fell under them.
29.	Richard Hitchens.		16	"		Penn shaft No. 1.	"	Leg broken while following the wagons to put a brake on them.
31.	John Lisbon.	Driver.	25	M.		Mayfield.	"	Thigh squeezed between wagon and rib.
Nov 1.	Elmer E. Palmer.	Miner.	26	"		Greensburg.	"	Ankle sprained by a fall of slate.
3.	Jacob Rush.	"	59			Mutual No. 5.	"	Injured internally across the back by being caught between wagons.
15.	John Dovey.	Driver.	26	"		Central.	"	Leg broken by being caught by a runaway trip of wagons.
24.	John McCafferty.	Miner.	55	"		Osceola.	Allegheny.	Injured by a fall of slate.
26.	Peter Baker.	"	28	"		Smithton No. 1.	Westmoreland.	Back and breast injured by a fall of slate.
Dec. 6.	Frank Shirley.	"	43	"		Alexandria.	"	Jaw bone and wrist broken by flying coal from a shot in the next room to where he was working.
18.	John Vousko.	Miner.	19	S.		Calumet.	"	Legs bruised by being caught between the wagon and a fall of roof coal and slate.
19.	John McKenna.	Driver.	24	M.		Mullin.	"	Severely injured on the hips by being caught between wagons.

THIRD BITUMINOUS DISTRICT.

(ARMSTRONG, BUTLER, CLARION, INDIANA, JEFFERSON, LAWRENCE, MERCER AND WESTMORELAND COUNTIES.)

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of submitting my report of the inspection of mines of the Third Bituminous district for the year ending, December 31, 1890.

Five fatal and twenty-nine non-fatal accidents occurred during the year, which shows an increase over that of last year of one of the former and two of the latter, but for the matter of cemparison we must keep in view that an increased production of 170,882 tons and a corresponding increment (465) of employes took place over that reported for the previous year.

At least three of these fatalities (Messrs. Fox, Hetrick and Kunsleman) were beyond any doubt accidents which could have been prevented by the exercise of ordinary care, and could only have happened through the grossest carelessness on their part. Mr. Fox knew that the slate which fell upon him was very loose and he was also reminded of this fact by Mr. Buck (a fellow miner), but rather than heed the friendly advice given him, or give the time necessary to take the loose material down to insure his own safety, he adopted the fatal course, for it would seem that for the sake of securing a trifling pecuniary gain he was willing to risk his life. Mr. Hetrick simply courted death. He had fired a shot in the mined coal which failed to bring it down, although the hanging material was left very loose and badly shattered, and without taking any precaution at all (according to the evidence of his son, who was working with him) to find out the condition of the hanging mass he sat down in front of it and commenced mining. He had just begun to do such work when about seven tons of coal fell, completely burying him. According to the evidence, he did not even sound the coal to find whether it was ready to fall or not. Kunsleman lost his life by violating the mine rules in reference to the use of powder. Had Mr. Erb used the ordinary precautions incident to mining, such as prop-

ing the roof sufficiently, he certainly would have been living to-day. Mr. Lucas' case was different from the others as he had used all necessary precautions to insure safety. These sad occurrences only emphasize the remarks made in some of my former reports in reference to the enforcement of more stringent rules for the maintenance of a proper system of discipline among the employes of the mines.

Below will be found the different classes of casualties which occurred during the year. In the non-fatal list ten of these persons had either their legs or arms broken.

CAUSES OF ACCIDENTS FOR 1890.	Fatal.	Non-fatal.
By falls of roof,	2	7
By falls of coal,	2	11
By mine wagons,	...	7
By miscellaneous causes,	1	4
Total,	5	29

Number of widows left by fatalties, 3; number of orphans left by fatalities, 10. In addition to the above yearly statistics on casualties, I have prepared a table giving the number of fatal casualties of the different classes, the number of employes and the coal tonnage for the twelve years ending, December 31, 1890, and I am glad to say that the record for this district as now comprised, shows an extremely low death rate. There has only been one life lost for every 2,009 persons employed, and there is a production of coal of 966,414 tons per life lost. This is a very satisfactory showing.

TABLE.—*Showing the number of fatal accidents, number of employes and tonnage for the last twelve years for the counties, or parts thereof, now comprising the Third Bituminous District.*

YEARS.	By falls of roof.	By falls of coal.	By mine wagons.	By miscellaneous causes.	Total.	Total employes.	Employes per accident.	Total tonnage.	Tonnage per accident.
1879,	1	1			2	3,442	1,721	1,558,000	779,000
1880,	1				1	4,806	4,806	2,382,804	2,382,804
1881,	3			1	4	4,980	1,245	1,672,009	418,000
1882,	2	1		1	4	5,814	1,453	3,403,412	850,834
1883,	2				2	4,407	2,203	1,330,412	665,206
1884,	2		1	1	4	4,881	1,220	2,207,953	551,988
1885,	3	2	1		6	3,836	639	1,801,057	300,176
1886,	4	1	1		6	4,798	800	2,099,999	349,999
1887,	0	1			1	5,231	5,231	2,752,811	2,752,811
1888,	2				2	4,997	2,498	2,625,433	1,312,716
1889,	2	1		1	4	4,977	1,244	2,665,017	666,254
1890,	2	2		1	5	5,379	1,056	2,835,899	567,179
Totals.	24	9	3	5	41	Yearly average of employes, 4,381.	Yearly average per accident, 2,009.	Yearly average in tons of coal, 2,277,900.	Yearly average in tons per accident, 966,414.
Totals, per cent.	59	22	7	12	100				
Average number of deaths per year.					3.4				

The following statistics are a summary of those taken from the mine operators' annual report:

Number of mines now in operation in the district,	64
Number of employes inside of mines,	4,677
Number of mine-bosses engaged at mines,	63
Number of employes employed outside of mines,	702
Total employes,	5,442
Number of tons (2,000 lbs.) of coal produced,	2,835,899
Number of tons (2,000 lbs.) of coal shipped,	2,780,031
Number of tons (2,000 lbs.) of coke produced,	72,886
Number of tons (2,000 lbs.) per fatal accident,	567,179
Number of tons (2,000 lbs.) per non-fatal accident,	101,289
Total number of days the mines were in operation,	15,055
Average number of days for 62 mines that were in operation over one hundred days in the year,	2398.+

With a few exceptions the mines in this district have been in operation very steadily during the year, and I am glad to report that they are all, with but few exceptions, in a very satisfactory condition as regards ventilation, drainage and general safety.

As the prospects are very favorable just at present for the appointment of a commission to revise the Bituminous mining act, it is unnecessary to make any suggestions as to remedying the defects of the present law.

Remarks on the "Miner's Hospital," built at this place for the benefit of all workingmen in this district, will be found in another part of this report; also other matter relating to the mines will be found in the report.

All of which is respectfully submitted.

THOMAS K. ADAMS,
Inspector of Mines.

MERCER, MERCER COUNTY, PA.,
February 7, 1891.

STATE MINERS' HOSPITAL.

One of the three "State Cottage Hospitals for Injured Persons" for the bituminous regions of the state is now completed and located at this place (Mercer), and will be formally opened on the 1st day of March and ready for the reception of the injured persons of this coal district. This is a grand state charity, for such an institution is much needed and will be of incalculable benefit to those poor persons for whose good it has been erected.

The building has at present been fitted up to accommodate about twenty injured persons, and will probably be under the direct charge of Miss Fanny R. Johnson as matron, who is a graduate of the New England Hospital and Training School of Boston. The other women help to be employed, I understand, will be experienced and properly trained nurses. It is not yet decided whether or not a resident physician, or a board of physicians who are residents of Mercer, will be selected to perform the medical and surgical services at the hospital.

The Governor has appointed a board of nine managers who will direct affairs and have a general supervision of the hospital. The board consists of the following-named gentlemen: Charles Whistler, hotel keeper, president of the board; Q. A. Gordon, attorney, secretary and treasurer of the board; Samuel Davidson, physician. These three members are residents of Mercer town. J. T. Blair, railroad manager; Mr. Kirkpatrick, railroad agent; William Hanlon, tinsmith. The above six gentlemen are all residents of Mercer county. Eli Robinson of

Butler, Butler county: Prosecuting Attorney James Whitla of New Castle Lawrence county, and Henry Williams, a mining-boss, of Oak Ridge, Armstrong county. As this board is recognized by all who know them to be composed of public-spirited gentlemen of undoubted ability and of unquestioned personal integrity, they will, without doubt, discharge the duties of their important trust faithfully and well. For a full description of the hospital building I clip the following from the *Mercer Dispatch and Republican:*

"The state hospital located in this place, and which has been in course of erection during the past summer and fall, was, as mentioned last week, on Thursday formally received from the contractors by the state commission. The members present were Hon. J. J. Spearman, Sharon; H. D. Tate, private secretary of Governor-elect Pattison, Hon. J. P. Coburn and S. H. French, accompanied by the architect, Mr. J. T. Windrim. The gentlemen carefully examined the work, and found that the contractors had fully complied with the plans of the architect as to quality and style of material, while the mechanism received the unqualified approval of both commission and architect.

"The site of the building, located as it is on the southeastern slope of the hill just east of town, is most delightful, so attractive indeed that members of the commission were constrained to express themselves in unmeasured terms of its beauty and adaptability, and pronounced it unequaled by that of any other state hospitals. It affords a beautiful view, and all surroundings are attractive and healthful. A short distance west are located the Mercer mineral springs, destined ere long to become a popular summer resort, while but a furlong south, are located the P., S. & L. E. and W. N. Y. P. depots, from which access to the hospital is easy. The grounds consist of four acres, which will early be graded and beautified. The drives in the vicinity will be fascinating during the summer.

"The gentlemen having the contract for the erection of the building were Messrs. J. I. Williamson, A. B. Filson and M. C. Zahniser, under the firm name of J. L. Williamson & Co. The work was done under the personal supervision of Mr. Williamson, which insured a thorough job, as he is a careful, experienced and competent mechanic. The company sub-contracted the stone work, plumbing, brick work, plastering and roofing.

"Each line of work receiving unqualified approval of the architect, Mr. Windrim, as being entirely in accord with his plans, and requirements of the original contract.

"The building faces the south, and upon entering the hall, to the left is the office of the warden, and to the right the operating rooms, fitted with suitable cupboards for its purpose and having an asphalt floor. From this hall the stairs rise, the rail and baluster being ash, and the steps Alabama pine, making a handsome appearance. A hall runs the

length of the brick, or residence portion of the building, east and west, leading to the wards at either end. The wards are exactly alike, each being 25x46 feet in size, 16 foot ceiling. Each contains two grates, one at each end, with large slate mantels, two radiators, four registers, and guaranteed to register 75 degrees of heat in the coldest weather. The wards have eleven windows, each ten feet high, the upper sash being hung on hinges at the top for ventilation. Attached to each is a clever sized bath and wash room, with all modern appliances, finished with Alabama pine.

"The second story has a twelve-foot ceiling, and consists of a linen room, bath room and four sleeping rooms, each containing a small radiator, all finished in good style. This portion is only intended as sleeping apartments for warden and nurses.

"The dining room, immediately to the rear of the entrance hall, is 14x20 feet, ten foot ceiling, with kitchen and pantry adjoining. The pantry is fitted with all necessary cupboards, and the kitchen with large range, hot and cold water, etc. The cellar has several apartments, one of which is supplied with range and stationary tubs as a wash room. A large furnace in one room heats the entire building, and the whole is fitted throughout with gas and water pipes, with drain to the creek.

"The hospital makes a very neat appearance and we welcome its location in our midst. The good judgment of the commission in selecting the site is already proven, and although the members were hard pressed when the matter was under consideration to select some other, they are now to be congratulated that their better judgment prevailed because of the general verdict in behalf of the beautiful property the state is now the possessor of. The cost of the property is within the limit of the state appropriation, $15,000. The next step is the placing of it in charge of a competent manager, the appointment of a physician, etc., which will be done by a board of trustees soon to be appointed by the Governor."

DESCRIPTION OF MINES.

Mines in Armstrong and Clarion Counties, Located on the Allegheny Valley Railroad.

There are ten mines situated on this railroad and all (except the Gosford) have been operated steadily during the year.

Glen, Kittanning and Rimerton are not extensive mines, and when last examined, they were found to be in a very healthful condition, although Glen depends on the natural forces for producing the ventilation, we measured 4,200 cubic feet of air in circulation near face of works, at last visit, which was sufficient for the 22 miners employed. At Kittanning mine, 19,500 cubic feet of air was being distributed throughout the workings thereof, which was an abundance for the 35 miners em-

ployed therein. The ventilation is produced by a substantial furnace. The Rimerton was in a very fair condition both as regards ventilation and drainage when last examined.

Gosford mine had not been operated steadily during the first six months of the year. A change of ownership had just taken place about the time of my last visit to this mine, and upon examination I did not find it in a very satisfactory condition, at least as far as the drainage was concerned. The ventilation could have been much better, if a fire had been kindled in the ventilating furnace. There were about a dozen miners employed at this mine when I last visited it.

Riverview mine is in about the same condition now as it was when last reported. During the wet season of the year some of the entries became flooded with water as the means (syphons) employed to keep it dry, under such emergencies, are very inadequate, but instead of depending on syphons for draining the dip working in the future, a ditch is being cut which will be of sufficient size to cope with such difficulties as they arise. No artificial means for producing the ventilation of the mine is yet employed, but the natural conditions are such (entries are driven from one side of the hill to the other) as to insure fair ventilation. We measured 7,000 cubic feet of air in circulation at last examination,

Red Bank mine is in reasonable condition. We measured about 6,000 cubic feet of air at face of works, so that the quantity of air in circulation was up to the lawful requirements. Drainage at one point on main hauling road was somewhat defective.

Monarch mine is in good condition. We measured 7,000 cubic feet of air being well distributed throughout the mine. A temporary furnace has been built which insures a steady current and increases the volume of air very much,

Mineral Ridge mine is in a much better condition now than it has been for some years past. The old workings, which gave off a considerable amount of carbonic acid gas, have all been abandoned, and the inner works are being opened in new territory, so that when the ventilation reaches the miners it is much purer than formerly.

Church Hill mine is a small operation and was in fair condition when last examined.

Hardscrabble is the largest mine in my district on the Valley railroad and when last examined was found in good condition. We found 22,000 cubic feet of air in circulation and fairly distributed throughout the interior of the mine.

Mines Located on Low Grade Division and Sligo Branch of the Allegheny Valley Railroad.

On these two railroads ten mines are in operation. Oak Ridge mine, as usual, was in splendid condition throughout the year. Plenty of ventilation (22,500 cubic feet) in circulation and well distributed to face of workings. Drainage almost perfect.

Fairmount No. 2 is up to the requirements of the law in every particular. This mine was put in operation last March, on the Armstrong county side of the Red Bank creek, and is now producing about 600 tons of coal daily, and giving employment to about 230 employes. The company is producing coal from two seams, the Upper and Lower Freeport. The upper seam is from three to four feet thick, and the lower one from three or four feet thick on the hills, to about seven or eight feet in swamps. The workings of the upper vein are directly over those of the lower one. The product of the upper mine is run down a short inclined plane to the check house of the lower mine and from thence down the main inclined plane to tipple. The coal seam in the lower mine is very irregular and much troubled with large "clay-veins." A fan six feet in diameter, with good engine, has been erected and produces sufficient ventilation for both openings. In order that the same ventilating power might ventilate both openings, a shaft was sunk from the upper vein to the lower one, which was about fifty feet deep, the results from which proving satisfactory. We measured 23,000 cubic feet of air in circulation and conducted to face of headings. Mine is well drained also.

Fairmount No. 4 was not found in a very satisfactory condition, but since my last visit a new opening (a slope) has been put down at face of works which has put the mine in a safe and healthy condition.

At Star mine, 16,000 cubic feet of air was being circulated in it and was conducted very well to face of headings. A ventilating furnace was built during the year. Machinery was placed at mouth of drift and now hauls the coal a distance of 1,700 feet from a station near face of works by the tail rope system. The coal vein is very irregular at this mine. On the hills it will be about three feet thick and in the swamp from five to six feet, making the mining of this seam very expensive.

Avondale, Keystone, Diamond and Acme were all found in excellent condition and up to the requirements of the law, both in regard to drainage and ventilation. Quantity of air in circulation at Avondale mine near face of headings was 6,000 cubic feet and had only about thirty-five miners employed. Keystone mine was also well ventilated, having over 12,000 cubic feet of air, carried well to face of headings. At Diamond mine we measured over 10,000 cubic feet of air in circulation. While at Acme, 17,000 cubic feet was the quantity which kept these mines in a very healthful condition.

A furnace was built at Albion mine during the year. Sufficient ventilation is now being produced at this mine and when measured, showed a volume of 9,800 cubic feet well distributed through the workings thereof. Drainage defective in one entry owing to the syphon not having sufficient power to keep the water out of water lodgement.

Cherry Run mine was found in very good condition. Mine was well ventilated, having a volume of air equal to 7,600 cubic feet per minute and conveyed to face of works.

Mines Situated at Reynoldsville, Jefferson County.

There are still four large mines in operation at this point for although Old Soldier Run was exhausted during the year, another (New Hamilton) was opened, which maintains the number. At New Hamilton a substantial furnace has been built which is producing about 20,000 cubic feet of air and is being conveyed to face of workings through double headings. Pleasant Valley mine will be exhausted in about one year from now. The work to be done in the future will be the drawing of room and heading pillars. The mine was in very good condition when last examined. Quantity of air circulating was 32,000 cubic feet.

Extensive improvements are being made at Big Soldier Run mine. One opening worked by the double-heading system has been driven into solid territory to the rise of the coal seam, while another which will be the main outlet for the product to be taken from the company's valuable and extensive coal property, and consisting of four parallel headings, is being driven in the center of territory and to the dip of the vein. It is the intention of the company to drive these parallel headings to the boundary line at Sykesville which will be a distance of about eight or nine thousand feet in a southeast direction from mouth of main opening, while a double heading will be started at the shaft, driven to the rise of seam to meet the four parallels. After this connection has been made the shaft at Sykesville will be utilized as a natural outlet to drain the mine. Taking into consideration the depth and surface level of this shaft opening, together with the angle of dip of coal seam to that point, I am reliably informed that these conditions are such that the water produced in the mine will naturally flow out at the top of shaft, thereby draining one-half of the territory, that is to the rise of the seam. Having such natural means so favorably located, the mine can be successfully worked for years with but little or no expense for drainage. As the property consists of several thousand of acres and in view of the preparations now being made, this will certainly be one of the largest mining plants in the bituminous regions of the state. The coal will be taken from the mine by a system of endless rope haulage. The four parallel entries have been driven for the purpose of utilizing two separate systems of endless rope haulage and by such, when all completed, the company expects to produce from this mine alone, over three thousand tons of coal daily.

Two air compressors have been put in position one at the shaft at Sykesville and the other at the main opening. They will be used for furnishing power so that four of Harrison's coal mining machines can be operated in undercutting the coal in the main entries, the company believing that they can be driven much faster by such means than by the miner and his pick.

Two fans, six feet in diameter each, have been erected and are producing nearly 40,000 cubic feet of air, consequently having this volume of

air well distributed to face of headings, the miners have a plentiful supply of fresh air to work in. Drainage is reasonable.

Sprague is a very large mine, and when last examined it was found in a very satisfactory condition. It was well ventilated. There was in circulation about 60,000 cubic feet of air at both openings. There are about 300 persons employed at this mine. A fan, six feet in diameter, was erected at what is known as the new opening, which is driven into the second hill from the tipple. Both in new and old openings there is an abundance of fresh air for the workmen.

Mines in Butler and Mercer Counties Located on the Pittsburgh, Shenango and Lake Erie Railroad.

The twelve mines situated in this part of the district have all been in operation during the year. Karns is a very small operation. The product of the fourteen miners employed therein is used principally for coaling the locomotives on the Pittsburgh and Western Narrow Gauge railroad. It is kept up to the requirements of the law both in regard to ventilation and drainage. At last visit both Kiester and Gomersal mines were in fair condition. Allegheny mine is well ventilated having measured at face of north main entry 9,000 cubic feet of air at last examination. The drainage was good at the face of works. A new drift opening has been made near face of north main heading and will serve both as a traveling-way and a hauling road over which the coal will be taken from the mine to the tipple. The Sterling or Livingston mine was visited on several occasions, but I failed to find a sufficient number of persons employed therein to make it subject to the requirements of the law. An 8-foot diameter fan is being erected at Barnes mine which will insure for it a sufficient volume of air for the future.

Black Diamond mine is in splendid condition and up to the requirements of the law. Twenty thousand (20,000) cubic feet of air was being well distributed to every point of the mines. Drainage was also very good.

The ventilation at the Spear's mine was sufficient for the number of persons employed therein. We measured 5,250 cubic feet of air in circulation. The drainage was not very good.

The old Wick mine was exhausted during the year but another shaft has been sunk on the adjoining farm to take its place.

Chestnut Ridge had sufficient ventilation at upcast shaft, but there was not enough of air at face of the works, consequently, there was not as pure an atmosphere in the working places of the mines as there ought to have been.

Pardoe mine was fairly ventilated, having measured 20,000 cubic feet of air in circulation and conducted well to head of entries. A shaft has been sunk which will be used as a traveling-way. It will be very convenient for the miners as a good stair has has been put into it and its location will be handy to where they are working.

Other Mines Located in Mercer County.

Stoneboro' No. 2 was not in very good condition when examined on the 4th day of last December. The ventilation was insufficient in Nos. 15 and 19 entries and they were also badly flooded with water, but since my visit a new air course has been made which has improved the ventilation considerably.

I found No. 3 mine in very good condition. We measured 12,800 cubic feet of air being well distributed to the face of heading. The hauling roads were in much better condition at last visit than they had been at some of the previous ones.

Carver mine was in good condition at time of last examination. Eleven thousand five hundred cubic feet of air was being produced and well distributed throughout the different entries of the mine. Drainage was fair.

Ormsby slope had a good current of air circulating in different entries but drainage not as good as it might have been.

At Shenango mine a ten-foot diameter fan has been erected, which is producing an ample supply of pure air for the workmen employed therein. The general condition of the mine is good.

At the Lackawannock shaft everything about the mine was in good order. Ventilation, 10,000 cubic feet, gave an abundance of air for the number of persons employed in the mine. The mine was well drained, and all the machinery connected therewith was in good condition.

The Jackson mine has been in operation for a few months and was found in fair condition for such an old mine, considering that it has not been under the law for the last two years.

New Virginia mine was exhausted about the end of the present year.

Mines Located in Beaver and Lawrence Counties.

Beaver Falls mine is a small operation, only employing about twenty miners. The ventilation and drainage of mine were satisfactory.

Sterling is a new work, opened at the beginning of the year. Company is now employing upwards of ninety persons. The mine was well ventilated and drained. We measured 10,500 cubic feet of air in circulation and well distributed to face of headings. A second opening has also been made since my last visit A substantial furnace has been built which will produce sufficient ventilation for such a mine for some years to come. Have erected an electric plant which furnishes the power for two Jeffrey coal cutting machines. They are doing very efficient work.

The Baker mine is in much better condition now than it has been for years. The ventilation and drainage of mine is much improved.

The Beaver mine was found in very fair condition. The ventilation, 10,000 cubic feet, was sufficient for the number of persons employed.

The ventilation at the Clinton mine was good at time of last visit, with drainage fair for such a place.

At the last examination of Excelsior mine the current of air was not very strong at face of headings, but they were making some improvements to remedy this defect. The means used for producing the ventilation is an iron basket hung in the air shaft with a fire in it, and when the fire needs replenishing the coal has to be carried up a ladder in a man's arms and put into it. I hope to see a very different ventilating power erected soon, as the age in which iron baskets were considered an improved method for producing ventilation, is past.

The ventilation at the Penn mine was found to be sufficient. A substantial furnace has been built during the year and was producing at the time of my last visit 12,400 cubic feet of air, which was an abundance for such a mine.

Mines in Indiana and Westmoreland Counties, Situated on the West Penn Railroad.

Superior mines Nos. 1 and 2 were opened near Homer City, Indiana county during the year. The product of the mines is to be used entirely for making coke, and for this purpose 201 coke ovens have been built. Although a large amount of money has been expended in building ovens, etc., outside, very little has been spent inside of the mines for the purpose of insuring for the miners a healthful supply of pure air. Of course promises are given that the matter of ventilation will be attended to.

Mitchell mine, a short distance from Homer City, is a new opening employing a few miners. The product of this mine will be used for coking purposes, 24 ovens having been built. The Maher, Smith and Turner are small operations, each employing from 15 to 20 miners. All three were in good condition when examined on the 11th day of December.

The Fairbank and Forster mines are operated by the same company, but one is located in Westmoreland county, and the other in Indiana. These mines are up to the requirements of the law in every particular. Quantity of air in circulation at the Forster mine was 25,000 cubic feet and well distributed to face of double headings. Also about 14,000 cubic feet was measured near face of works in the Fairbank mine.

At Avonmore mine an air shaft was sunk and a good furnace was built which ought to insure good ventilation for the future, if it is properly conducted and the ventilating details attended to. We measured 18,000 cubic feet of air passing into the mine, but did not find a sufficient quantity near the face of a few of the entries.

Bagdad No. 3, as usual was in splendid condition, both as regards the quantity of air and drainage. Nearly 13,000 cubic feet of air was measured, having 8,000 of this quantity at face of entries. At Bagdad No. 2 an air shaft has been sunk, a substantial furnace built, and a second

opening made during the year. The general condition of the mine is very satisfactory. I measured 24,000 cubic feet of air at last visit, which was about three times the quantity required by law.

The Blackstone or Lewis & Co.'s mine is a new opening, but I did not find it in a very satisfactory condition. Did not find enough of ventilation, but have the promise that this matter shall receive early attention.

Leechburg mine Nos. 3 and 4.—No. 4 mine is well ventilated, having 11,000 cubic feet of air in circulation to supply the 23 miners employed. The mine is practically free from water, therefore the workingmen have good air and comfortable places in which to labor. Mine No. 3 was also well ventilated and the working places of the miners dry. The hauling roads were in excellent order. We measured 18,000 cubic feet of air passing through the mine.

TABLE I *Showing location of collieries in the Third Bituminous Mine District.*

NAME OF COLLIERY	Name of operator	Location—County.	Name of superintendent.	Postoffice address.
Maher	Maher Coal Company	Indiana	Thomas Maher	Blairsville, Indiana county.
Oak Ridge	Oak Ridge Coal and Mining Company	Armstrong	J. C. Baker	Oak Ridge Station, Armstrong county.
Ormsby Slope	Shenango Coal and Mining Company	Mercer	George M. Frack	Mercer, Mercer county.
Pleasant Valley	Bell, Lewis & Yates Coal Mining Company	Jefferson	George Millenger	Reynoldsville, Jefferson county.
Penn	Penn Coal Company (Limited)	Lawrence	W. H. Marquis	New Castle, Lawrence county.
Pardee	Mercer Coal Company	Mercer	W. H. Richardson	Greenville, Mercer county.
Riverview	Riverview Coal and Mining Company	Armstrong	James L. Moore	No. 22 West Swan St., Buffalo, N. Y.
Red Bank	Reynolds & Lane	Clarion	J. H. Lane	Red Bank Furnace, Clarion county.
Rimerton	Murray & Butler	Armstrong	John L. Murray	Rimer, Armstrong county.
Shenango	Shenango Coal and Mining Company	Mercer	George M. Frack	Mercer, Mercer county.
Sprague	Bell, Lewis & Yates Coal Mining Company	Jefferson	George Millenger	Reynoldsville, Jefferson county.
Stoneboro' No. 2	Mercer Coal and Iron Company	Mercer	Robert P. Cann	Stoneboro', Mercer county.
Stoneboro' No. 3	" " "	"	" "	" "
Spears	Spears & Filen	"	James Spears	Grove City, Mercer county.
Star No. 2	Northwestern Coal and Iron Company	Clarion	S. Taylor Sheaffer	New Bethlehem, Clarion county.
Smith	Robert Smith	Indiana	Robert Smith	Blairsville, Indiana county.
Sterling	Sterling Mining Company	Beaver	George Gould	Cannelton, Beaver county.
Superior No. 1	McCreary Coke Company	Indiana	Harry McCreary	Homer City, Indiana county.
Superior No. 2	" " "	"	" "	" "
Turner	J. M. Turner	"	J. M. Turner	Blairsville, Indiana county.
Wick				
Turner B				
Fairmount No. 4	Fairmount Coal and Iron Company	Clarion	S. Taylor Sheaffer	New Bethlehem, Clarion county.
Fairbank	Saltsburg Coal Company	Westmoreland	D. S. Robinson	Saltsburg, Indiana county.
Foster	" "	Indiana	" "	" "
Glen	J. R. Smith	Armstrong	J. R. Smith	Manorville, Armstrong county.
Gasford	Turner Coal and Mining Company	"	J. L. Turner	Gosford, Armstrong county.
Gomersal	Gomersal Coal Company (Limited)	Butler	Wm. Ferguson	Gomersal, Butler county.
Hardscrabble	Brady's Bend Mining Company	Clarion	C. F. Hartwell	Oil City, Venango county.
Hickory Slope				
Hill				
Jackson				
Kelster	G. G. Stage	Butler	G. G. Stage	Greenville, Mercer county.
Karns	Pittsburgh, Fairport Coal and Coke Company	"	M. L. Metheny	Karns City, Butler county.
Keystone	Keystone Coal and Mining Company	Clarion	George E. Henry	East Brady, Clarion county.
Kittanning	Kittanning Iron Company (Limited)	Armstrong	Henry Colwell	Kittanning, Armstrong county.
Lackawannock	Pierce Coal Company (Limited)	Mercer	Archy McIntyre	Neshannock, Mercer county.
Leechburg No. 3	Leechburg Coal and Coke Company	Westmoreland	A. W. Ashbaugh	Leechburg, Armstrong county.
Leechburg No. 4	" " "	"	" "	" "
Lewis	Lewis & Co.	"	Alfred Hicks	" "
Mineral Ridge	Mineral Ridge Coal Company	Clarion	C. W. H. Eiche	West Monterey, Clarion county
Monarch	Monarch Coal Company	"	C. P. McCafferty	East Brady, Clarion county.
Mitchell				
Avonmore	Avonmore Coal Company	Armstrong	L. W. Hicks	Avonmore, Indiana county.
Acme	Acme Mining Company	Clarion	J. W. Hill	East Brady, Clarion county.
Avondale	Avondale M. F. and Gas Company	"	James Mitchell	Lawsonham, Clarion county.
Albion	Albion Coal Company	"	James W. Ganoe	Rimersburg, Clarion county.
Allegheny	Allegheny Coal Company	Butler	Frank Morrison	Argentine, Butler county.

Black Diamond	Filer, Sutliff & Co.	Mercer	Enoch Filer	Sharon, Mercer county.
Bagdad Nos. 2 and 3	Bagdad Coal Company	Westmoreland	Alfred Hicks	Leechburg, Armstrong county.
Barnes	Mercer Coal Company	Butler	W. H. Richardson	Greenville, Mercer county.
Baker	Scott & Co.	Beaver	L. S. Hoyt	Rock Point, Beaver county.
Beaver	Beaver Coal and Coke Company	Lawrence	H. K. Hartsuff	"
Beaver Falls	James Clayton	Beaver	James Clayton	Beaver Falls, Beaver county.
Big Soldier Run	Bell, Lewis & Yates Coal Mining Company	Jefferson	George Mellinger	Reynoldsville, Jefferson county.
Carver	Carver Coal Company	Mercer	Frank Filer	Stoneboro, Mercer county.
Chestnut Ridge	Filer, Westerman & Co.		Enoch Filer, sr.	Sharon, Mercer county.
Clinton	Clinton Coal Company	Lawrence	Albert Harbison	Rock Point, Beaver county.
Cherry Run	Cherry Run Coal Company	Clarion	John G. Hagerty	East Brady, Clarion county.
Church Hill	McCollum & George Horney	"	J. M. McCollum	Monterey, Clarion county.
Diamond	Thomas, Mitchell & Sons	"	W. S. Mitchell	East Brady, Clarion county.
Excelsior	Wampum Run Coal Company	Lawrence	Robert Mehard	Wampum, Lawrence county.
Fairmount No. 2	Fairmount Coal and Iron Company	Armstrong	S. Taylor Sheaffer	New Bethlehem, Clarion county.

TABLE NO. 11—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Third Bituminous Mining District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES	Location--County.	Total production in tons of coal	Total production in tons of coke	Total shipment in tons of coal	Number days worked	Number persons employed	Number fatal accidents	Number non fatal accidents	Number kegs powder used	Number steam boilers	Number horses and mules	Number mine locomotives	Number coke ovens
Avonmore	Armstrong	38,527		38,527	254	73		1	160		4		
Acme	Clarion	39,468		39,468	191	90					3		
Avondale	"	24,690		24,690	245	55		1	125		3		
Albion	"	35,000		35,000	200	65	1		60		5		
Allegheny	Butler	26,903		26,733	225	45		3	118	2	3		
Black Diamond	Mercer	56,062		56,062	196	71			390	6	6		
Bagdad No. 2	Westmoreland	23,007		23,007	280	43					2		
Bagdad No. 5	"	27,800		27,800	280	55			440		5		
Barnes	Butler	33,975		33,975	257	71			20	1	9		
Baker	Beaver	49,956		49,956	246	97			258		8		
Beaver	Lawrence	30,617		29,630	256	74			172	2	8		
Beaver Falls	Beaver	8,330		8,330	240	20			9		1		
Big Soldier Run	Jefferson	320,937		320,937	288	322		2	1,709	2	14		
Carver	Mercer	60,005		60,005	248	114			397	6	7		
Chestnut Ridge	"	61,215		61,215	240	111		1	79	5	8		
Clinton	Lawrence	27,117		27,117	232	67		1	75		5		
Cherry Run	Clarion	22,595		22,595	212	50			100		4		
Diamond	"	37,303		37,303	240	54					5		
Church Hill	"	5,000		5,000	174	21					2		
Excelsior	Lawrence	34,321		34,321	240	56		1	150	1	4		
Fairmount No. 2	Armstrong	85,006		85,006	240	252	1	1	700	2	13		
Fairmount No. 3	Clarion	60,673		60,673	290	92		1	500		13		
Fairbank	Westmoreland	162,700		162,700	289	247					16		
Foster	Indiana	87,600		87,600	292	132	1				9		
Glen	Armstrong	11,764		11,764	313	25			55		3		
Gosford	"	7,000		7,000	150	36					6		
Gomersal	Butler	38,550		36,550	260	54			200		5		

Hardscrabble,	Clarion,	30,000		30,000	200	117				8			
Hickory slope,	Mercer,							2					
Jackson,	"	4,216		4,216	87	34				4			
Kelster,	Butler,	28,036	4,720	20,011	240	49			80	3			50
Karns,	"	13,216		13,216	268	27		1	48	2			
Keystone,	Clarion,	41,953		41,953	268	67			210	6			
Kittanning,	Armstrong,	24,619	14,012		209	63				6			66
Lackawannock,	Mercer,	12,900		12,900	190	62			300	2			
Leechburg No. 3,	Westmoreland,	49,174		49,174	268	73				6			
Leechburg No. 4,	"	23,526		23,526	300	26				1			
Lewis,	"	9,006		9,006	166	31			60	1			
Mineral Ridge,	Clarion,	25,266		25,266	208	54				4			
Monarch,	"	22,803		22,803	259	50		1	100	3			
Mitchell,	Indiana,	5,000	3,000		100	35				2			24
Maher,	"	24,362		24,362	279	22	1			3			
New Virginia,	Mercer,	10,273		9,906	190	29			3	3	2		
New Hamilton,	Jefferson,	33,020		32,293	142	105		1	201		4		
Oneida,	Butler,	6,808		6,412	235	14			8	2	2		
Oak Ridge,	Armstrong,	145,894		145,894	261	219	1		920	2	10		
Ormsby slope,	Mercer,	11,339		10,691	136	43			36	2	5		
Pleasant Valley,	Jefferson,	126,699		126,699	225	160			763		16		
Penn,	Lawrence,	44,632		44,632	253	86		1	225		5		
Pardoe,	Mercer,	50,512		44,122	268	96		4	363	3	11	1	
Riverview,	Armstrong,	66,410		66,410	266	86		1			10		
Red Bank,	Clarion,	20,300		20,000	214	54			90		5		
Rimerton,	Armstrong,	6,500		6,500	225	25					3		
Shenango,	Mercer,	38,250		36,412	222	74			143	4	4		
Sprague,	Jefferson,	250,521	26,903	225,263	261	318		1	1,523	1	41		100
Stoneboro' No. 2,	Mercer,	76,919		76,919	271	145		1	123	1	16		
Stoneboro' No. 3,	"	40,695		38,905	253	83		2	128	2	5		
Spears,	"	50,000		47,700	240	66			240	3	4		
Star,	Clarion,	130,607		130,607	285	216		2	1,032	1	12		
Smith,	Indiana,	20,203		20,103	270	26					2		
Sterling,	Beaver,	43,500		43,500	275	97			240	2	7		
Superior No. 1,	Indiana,	35,982	24,251		287	240				2	4		201
Superior No. 2,	"	22,032		22,032	305	25					2		
Turner,	"	5,000		5,000	200	25				2	1		
Turner or Livingston,	Butler,	19,449		19,449	170	45			20	2	2		
Wick,	Mercer,												
Grand total,		2,835,899	72,886	2,780,031	15,055	5,379	5	29	10,307	60	400	1	441

TABLE NO. III.—*Showing the number of each class of employes at each colliery in the Third Bituminous Mine District, during the year 1890.*

NAMES OF COLLIERIES.	Location. County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Avonmore	Armstrong	1	60		2	4		67		1			5	1	7	74
Acme	Clarion	1	73		2	5	2	83		1			5	2	8	91
Avondale	"	1	43		2	3		49		1			4		5	56
Albion	"	1	49		2	4		63		1					1	66
Allegheny	Butler	1	34		2	3		40		1	1		4		6	46
Black Diamond	Mercer	1	51		4	6		62		1	2		5	2	10	72
Bagdad No. 2	Westmoreland	1	34		1	2		38		1			3	2	6	44
Bagdad No. 3	"	1	45		1	3		50		1			3	2	6	56
Barnes	Butler	1	46		4	3	1	59	2		2		6	3	13	72
Baker	Beaver	1	80		2	3		90		1			5	2	8	98
Beaver	Lawrence	1	51		6	5		63		1	3		5	2	12	75
Beaver Falls	Beaver	1	16		1	1		19					1	1	2	21
Big Soldier Run	Jefferson	1	255		14	20	14	304		3	2		9	5	19	323
Carver	Mercer	1	81		12	7	3	101	2		2		8	2	14	115
Chestnut Ridge	"	1	82		6	8	3	100	2		3		5	2	12	112
Clinton	Lawrence	1	51		3	6		61		1			3	3	7	68
Cherry Run	Clarion	1	35		4	3		43		1			6	1	8	51
Church Hill	"	1	15		1	2		19					3		3	22
Diamond	"	1	40		1	5	1	48		1			4		5	53
Excelsior	Lawrence	1	40		4	4		49		1	2		3		8	57
Fairmount No. 2	Armstrong	1	200		3	14	4	222		5			20	4	31	253
Fairmount No. 3	Clarion	1	64		3	12	3	83		2			5	3	10	93
Fairbank	Westmoreland	1	172		27	15	3	218		4	2		22	2	30	248
Foster	Indiana	1	101		12	9	2	125		2	2		2	2	8	133
Glen	Armstrong	1	18			3		22					2	2	4	26
Gosford	"	1	25			2	3	31		1			3	2	6	37
Gomersal	Butler	1	41		3	3	1	49		1			3	2	6	55
Hardscrabble	Clarion	1	97		4	8	1	111		1			5	1	7	118
Hickory Slope	Mercer															
Jackson	"	1	25		1	3		30		1			4		5	35
Kiester	Butler	1	32		4	4		41		1			7	1	9	50

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TABLE IV– *List of Fatal Accidents occurring in and about the mines of the Third Bituminous Mine District, for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON.	Occupation.	Age.	Widow	No. of orphans.	Name of colliery.	Location—County.	Nature and cause of accident
Feb 6.	Samuel Lucas.	Miner.	21	No.	. .	Oak Ridge.	Armstrong.	The nature of Mr. Lucas' accident was a compound fracture of one of his legs and rupture of the gall bladder, caused by a fall of slate and coal while working in company with his two brothers drawing out an entry pillar. Mr. Lucas was lying on his side on the entry road and undercutting the coal near the inner corner of the coal face, and while doing so he struck a clay slip in the mining which angled from bottom into the solid coal, thickening as it extended into the roof, and the coal, together with a large piece of roof slate, being thus released, fell upon him with fatal result. The three brothers stated that they had examined the place a few minutes before the accident occurred and considered it perfectly safe. Lucas was considered a careful young man, and according to all the information I could obtain, together with a personal examination of the place where the accident happened, such an accident might have happened to the most experienced miner. Mr. Lucas lived six days after receiving his injuries.
July 16.	William Hetrick.	Miner.	61	Yes.	. .	Albion.	Clarion, ...	Mr. Hetrick was killed by a fall of coal, while working in a room with his son. He had mined the coal in his room to a depth of five feet and about fifteen feet across the wall face and had fired a shot in it about one hour prior to the accident, but the powder having failed to do its work, he had what is known as a "hanging shot." The hanging coal was left in a much shattered condition, and instead of using a little extra labor to make himself safe he deliberately lay down in front of it and began to "bear-in." He had just begun to mine, or undercut, the coal, when the loose mass fell, completely burying him. Such gross carelessness in any man is inexcusable.

Nov.	28,	Monroe Kunsleman,	Miner,	17	No,	Fairmount No. 2,	Armstrong,	This boy was fatally injured from the effects of the explosion of a keg of powder. Kunsleman was working with an older miner, named Samuel Hinderliton, and was preparing a shot of powder to be fired in the mined coal in his room, and during its preparation his paper cartridge burst, allowing the loose powder to fall to the floor, and he having a lighted lamp on his cap, a spurt from it dropped into the loose explosive, the flame of which was communicated to the whole keg, which in turn exploded and set fire to his clothing and being burned so severely he only lived a few weeks.
Dec.	8,	Patrick Fox,	Miner,	55	Yes.	2 Foster,	Indiana,	Mr. Fox was killed instantly by a fall of center slate. The coal seam is about six feet thick and at that point in the mine where Fox was working there was a center slate of about four to seven inches thick, located in the seam, about three and one-half feet from the floor. He had blasted down the under bench of the seam, but neglected to take down the center slate which was very much shattered from the effects of the shots, and rather than spend some time in making the place safe, he lay down under the loose slate and commenced bearing-in, and although he was told of its dangerous condition by Mr. Buck (a fellow miner) he did not attempt to make himself safe, consequently he lost his life by gross carelessness.
Dec.	12,	Jonathan Erb,	Miner,	42	Yes.	8 Maher,	Indiana,	Mr. Erb was instantly killed by a fall of roof slate. He was cutting over into a room rib preparatory to drawing it out, and although he had not cut through into the next room he had excavated the coal seam to such an extent that there was an open space (including the width of roadway) of about 12 x 14 feet, and he had neglected to set a single prop to sustain the roof. The roof where Mr. Erb was working was badly fractured, owing to the place being near the crop line, consequently he ought to have known the dangerous condition of the roof with such an open space and should have protected himself by setting props to it.

TABLE No. V.—*List of Non-Fatal Accidents occurring in and about the Mines of the Third Bituminous Mine district, for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 2	Henry Shuttleworth.	Miner.	15	S	Pardoe.	Mercer.	Leg broken by a fall of coal.
9.	John Shuttleworth.	"	20	"	"	"	Foot injured by a fall of roof slate.
25.	Thomas Forsythe.	"	40	M	Penn.	Lawrence.	Leg and ribs bruised by a fall of roof slate.
Feb. 11.	John Johnston.	"	20	S	Chestnut Ridge.	Mercer.	Arm broken by a fall of coal.
12.	Herman Peters.	Driver.	40	M	Clinton.	Lawrence.	Arm broken in two places by mine wagons.
Mar. 19.	William Grundy.	"	18	S	Hickory Slope.	Mercer.	Foot crushed between mine wagons.
19.	E. McKee.	Miner.	22	"	" "	"	Foot badly cut by a fall of slate.
20.	Wm. Lewis.	"	22	M	Sprague.	Jefferson.	Injured by a fall of coal.
31.	Robert Sybert.	Driver.	28	"	Avondale.	Clarion.	Arm broken by mine wagons.
Apr. 30.	Eugene Edinger.	Miner.	32	"	Allegheny.	Butler.	Collar bone broken by fall of coal.
Jan. 2.	James Shoup.	Blacksmith.	35	"	Monarch.	Clarion.	Hand blown off by an explosion in a gas pipe when making a weld.
June	Fred Wood.	Driver.	17		Star.	"	Injured by mine wagons.
2.	Walter Saylor.	Laborer.	18		Allegheny.	Butler.	An arm broken by falling off railroad cars.
8.	Joseph Stitt.	Miner.	46		Big Soldier Run.	Jefferson.	Leg injured by fall of coal.
11.	Harry Steffy.	Driver.	23	M	Avonmore.	Armstrong.	Back injured by mine wagons.
18.	John Everall.	Miner.	47	"	Stoneboro' No. 3.	Mercer.	Injured by fall of coal.
July 2.	Harry Springer.	"	20	"	Fairmount No. 4.	Clarion.	Injured by a fall of coal.
3.	Levi Culp.	"	30	"	Stoneboro' No. 2.	Mercer.	Hurt by a fall of roof slate.
7.	Farm Eshelman.	Driver.	18	S	Karns.	Butler.	Injured by mine wa ons.
Aug. 18.	Michael Reed.	Miner.	40	M	Riverview.	Armstrong.	Leg crushed by a fall of coal.
Sept. 1.	James Riley.	Driver.	53	"	Stoneboro' No. 3.	Mercer.	Leg broken by mine wagons.
9.	John Myers.	"	18	S	Pardoe.	"	Small bone in leg broken by fall of slate.
9.	John Shuttleworth, Jr.	Miner.	22	"	"	"	Finger crushed by fall of slate.
Oct. 4.	Christ. Bower.	Trapper.	14	"	New Hamilton.	Jefferson.	Injured between mine wagons.
25.	Matthew Crodden.	Miner.	42	M	Excelsior.	Lawrence.	Leg broken by a fall of coal.
Nov. 3.	Frank Beck.	"	22	S	Star.	Clarion.	Head injured by roof slate.
17.	William Howard.	"	38	M	Big Soldier Run.	Jefferson.	Injured by a fall of coal.
18.	Samuel Hinderliter.	"	26	"	Fairmount No. 2.	Armstrong.	Injured by a premature explosion of powder.
25.	J. F. Ketzel.	"	59	"	Allegheny.	Butler.	Badly injured by a fall of coal.

FOURTH BITUMINOUS DISTRICT.

(McKean, Potter, Tioga, Bradford, Sullivan, Lycoming, Clinton, Cameron, Elk, and that portion of Jefferson lying north of the Low Grade division of the Allegheny Valley railroad, and all that portion of Clearfield county adjacent to and north of the Low Grade division of the Allegheny Valley railroad, and all that portion of Centre county lying east and adjacent to the B. & S. S. railroad, north and adjacent to the Bald Eagle Valley railroad.)

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor of presenting herewith my annual report as inspector of mines for the Fourth Bituminous coal district of this state for the year ending December, 31, 1890, in compliance with the act of assembly of June 30, 1885, together with the usual tables compiled from the annual reports of the operators returned to my office. Blanks were duly forwarded by mail to all the mines subject to inspection under the law, sixty-six in number, and returns have been received from all but two of them.

These returns show a considerable increase in theproduction of the whole district over that of the preceding year, owing largely no doubt to the interference of high water and floods with the operations of the last-named year, and to an increase of miners working during the year just closed. Four new mines have been opened in the district during the year, and two have been worked out and abandoned. Considerable improvements have been made at a number of the mines in the way of new machinery for handling the coal, also in the way of ventilation and drainage; and a marked improvement of a general character is found throughout the district.

Two examinations for mine bosses were held during the year as noted more fully elsewhere in this report.

Respectfully submitted.

JAMES N. PATTERSON,
Inspector.

BLOSSBURG, PA., *February 1, 1891.*

SYNOPSIS OF REPORT.

Number of mines operating in the district,	66
Number of tons of coal mined,	3,773,844½
Number of tons shipped,	3,190,288
Number of tons of coke produced,	91,959½
Number of days worked,	5,373
Number of miners employed,	5,484
Number of outside men,	954
Number of horses and mules,	539
Number of mine locomotives,	17
Number of steam boilers,	37
Number of coke ovens reported,	836
Number of kegs of powder reported as used in the mines,	11,777
Number of fatal accidents,	8
Number of non-fatal accidents,	22
Number of tons produced per each fatal accident,	471,730½
Number of tons produced per each non-fatal accident,	126,083⅓

Two of the fatal accidents were caused by falls of rock, four by falls of slate, one by explosion of powder, and the other one the victim was run over by coal cars in the mine.

Nine of the non-fatal accidents were caused by falls of coal, four by falls of roof slate, one by a fall of rock, and eight by mine cars.

Tioga County Mines.

The Morris Run slope, Salt Lake and Jones Extension mines are operated by the Morris Run Coal Mining Company. I found these mines in good condition as to ventilation and drainage at each visit during the year. Air measurement at the Morris Run slope gave 89,600 cubic feet, Salt Lake 35,300 cubic feet and at the Jones Extension 13,200 cubic feet. These mines have been operated one hundred and ninety-two days during the year. W. R. Gilmour is mine foreman and M. Driscoll and Campbell Haddow are assistants; W. S. Nearing is superintendent and mining engineer.

Arnot mines, Nos. 3 and 4, are operated by the Blossburg Coal Company. These mines are connected in such a way that the coal is hauled over one chute. A new traveling-way has been made during the year, which adds much to the safety of the miners. A considerable number of improvements have been made on the outside workings, and both mines are in fair condition. The combined quantity of air passing through these mines is 78,700 cubic feet. This company has recently opened a new mine at Landrus, where they employ about thirty-five miners. Richard Simpson is mine-boss, assisted by John F. Nelson and F. Lyon.

Fall Brook mines are operated by the Fall Brook Coal Company. They have worked two hundred and thirty-five days during the year. A six-

teen foot Guibal force fan has been erected which has increased the ventilation to 58,000 cubic feet per minute, and is amply sufficient for the present workings. The air-current is judiciously divided and carried to the face of the headings and breasts. The drainage is fair. Robert Russell is mine-boss, assisted by David Nicol. Anton Hardt is superintendent and mining engineer.

Antrim mines are operated by the Fall Brook Coal Company. They have worked one hundred and seventy-six days during the year. At my last visit I found that the air-current at mine No. 1 measured 39,800 cubic feet per minute, and at mine No. 2 42,800 cubic feet, and the air is carried well to the faces of the workings. These mines are in good condition. A new opening has been made which will increase the output at this place. Joseph Lodge is mine-boss at mine No. 1, assisted by Morgan Davis, and George Snedden is mine-boss at mine No. 2. James Pollock is superintendent, and Anton Hardt is general superintendent and mining engineer.

Gaines mines, operated by the Gaines Coal and Coke Company, have done little work during the year. They were idle at the time of my last visit but appeared to be in good condition. P. C. Smith is mine-boss.

Bradford County Mines.

Barclay mines are operated by the Towanda Coal Company, and have worked two hundred and eleven days during the year. Their general condition is fair. Thomas Ditchburn is mine-boss; R. T. Dodson is superintendent.

Long Valley mines are operated by the Long Valley Coal Company, and have worked two hundred and eighty-three days during the year. The ventilation during the early part of the year was not good owing to a defect in the up-cast shaft, which was afterwards remedied so that now no cause for complaint can exist with proper attention to the furnace and doors. The shaft is ninety feet in depth and the stack is thirty feet in height, making a total up-cast column of one hundred and twenty feet. The furnace is seven by eight feet, and the arch thirty feet in length. John Carroll is mine-boss and E. O. McFarlane is superintendent.

Elk County Mines.

The Dagus mines, ten in number, located at Dagus, are operated by the North Western Mining and Exchange Company, and were found to be in good condition except the drainage in No. 4 mine. They have worked two hundred and forty days during the year. John Akiman is mine-boss at No. 1, John Cunningham at No. 3, and A. J. Jordan at No. 4. David Robertson is superintendent.

Mead Run mines, two in number, are also operated by the North Western Mining and Exchange Company, and are in good condition.

They have worked two hundred and fifty-eight days. Roger Hampson is foreman and Victor Swanson is mine-boss.

Whitehead mines, operated by the Elk Coal and Coke Company, have done no work since the 24th of last July owing to the tipple and washer being destroyed by fire on that day. The remaining portion of the year has been occupied here in the erection of new buildings and machinery, which are now nearly completed. William H. Taylor is superintendent.

Cascade mines, located at St. Mary's, operated by Kaul & Hall, have worked two hundred and ninety-nine days during the year. They employ 102 miners. Air measurement at No. 4 was found to give 8,800 cubic feet per minute, and at No. 5; 9,500 cubic feet. Condition of mines fair. Martin Dippold is mine-boss and Andrew Kaul is superintendent.

Hazel Dell mine, located at St. Mary's, operated by Kaul & Hall, is also in fair condition.

St. Mary's mines, consisting of five separate mines, and operated by the St. Mary's Coal Company, have worked three hundred and three days during the year, and are in good condition. One hundred and sixty-two miners are employed at four of these mines. The combined quantity of air circulating through the workings is 55,900 cubic feet per minute. Joseph Eddy is mine-boss, assisted by Richard Swanson.

The Tannerdale mine is also operated by the last named company and is in good condition. Jacob Anderson is mine-boss.

Jefferson County Mines.

Clarion mines, operated by the North Western Mining and Exchange Company, consisting of six separate mines, are in good condition. A new furnace has been built at No. 2 mine. They have worked 215 days during the year. Robert Hawkins is mine-boss at No. 1 and 3 mines, John Britt, No. 5, 6 and 7, and Thomas Mathews at No. 4. David Robertson is superintendent.

Coal Glen mines, consisting of two separate mines, operated by the Jefferson Coal Company, have worked 256 days during the year. Ventilation and drainage is fair. J. M. Jones is mine-boss and Austin Blakeslee is superintendent.

Beech Tree mines, consisting of three separate mines, only two of which are in operation, and operated by the Rochester and Pittsburgh Coal and Iron Company have worked 287 days during the year and are in fair condition as to ventilation and drainage. Air measurements at No. 2 mine gave 16,400 cubic feet per minute, and at No. 3 mine 62,500 cubic feet per minute. Willian Smith is mine-boss at mine No. 2 and Joseph Patterson at mine No. 3; John Reed is superintendent.

London mine, operated by the Falls Creek Mining Company, has worked 232 days during the year. General condition of the mine is fair. J. B. Williams is mine-boss.

Williamsport mines, consisting of three separate mines, and operated by the Clearfield Coal Company, are in good condition and have worke 288 days during the year. James P. Eddy is mine boss and A. K. Jacobs superintendent.

Rochester slope mines, consisting of two mines, operated by Bell, Lewis & Yates, employ 600 miners and have worked 240 days during the year. They put in a new pump, making altogether three pumps now in the mine. The condition of this mine is good as to ventilation and fair as to drainage. William Patterson and William Bolan are mine-bosses and L. W Robinson is superintendent.

Sandy Lick mine, operated by Bell, Lewis & Yates, employs 150 miners and has worked 190 days during the year. This is a new mine and its condition is good. James Craig is mine-boss; L. W. Robinson is superintendent.

McKean County Mines.

Instanter mine, owned by the Buffalo Coal Company, and operated by John F. Keating, is located at Clermont. It employs 26 miners and has worked 276 days during the year; condition of mine fair. James Maloney is mine-boss.

Centre County Mines.

Sugar Camp mines, consisting of two mines now in operation are owned and operated by the Lehigh Valley Coal company. They are also opening up another new mine, and have worked 246 days during the year, and the mines are in good condition, both as to ventilation and drainage. Robert Cooper is mine-boss and James F. Marsteller is superintendent.

Lucas Hill mine, owned and operated by the last named company, is nearly worked out; Low Price is mine-boss.

Snow Shoe colliery, operated by the Kelley Bros., employs 25 miners is not in very good condition owing to the fact that the coal is nearly, exhausted and operations are mostly confined to pillar work; Hugh McCroie is mine-boss.

There are two other new mines being opened, in this county by the Centre Coal Company, near Snow Shoe. They have been mining and shipping coal in a small way for the last two months; Henry Redding is mine-boss.

Clinton County Mines.

The Kettle Creek mines, two in number, located at Bitumen, operated by the Kettle Creek Coal Company, have worked 255 days during the year and are in fair condition. They employ 195 miners. A monkey drift has been recently driven which has improved the drainage very much in these mines. D. H. Thomas is mine-boss and G. L. Miller is superintendent and mining engineer.

No work has been done in the Cameron mines in Cameron county during the year; nor at the Fountain mine in Centre county during the same time, and the Sommerville mine in the same county is reported to be exhausted.

The name of John Britt was inadvertently placed in the list of those granted certificates of service in my last report, whereas it should have been placed under the head of "competency, second class."

The following list comprises the names of persons to whom certificates of competency, first and second class, have been granted during the year.

EXAMINATION HELD AT WILLIAMSPORT, PENN'A, JANUARY 14, 1890.

*First Class.**

Joseph Maxwell, William Patterson.

*Second Class.**

James Craig, David Nicol,
George Simmers, Robert Brownlee,
Low Price, Rob't Spence.

EXAMINATION HELD AT WILLIAMSPORT, PENN'A, DECEMBER 2, 1890.

*First Class.**

Alexander Dunsmore, Wm. M. Johnson,
James Dunsmore.

*Second Class.**

James Methven, William Crichton,
Cambell Haddow, Wm. M. Dunsmore,
George Forsyth, James Dickson,
John M. Jones, John Boag,
C. E. Husted, Morgan Davis.

*Certificates of competency, first class, entitles the holder thereof to fill the position of mine-boss in any bituminous coal mine in Pennsylvania; and certificates of competency, second class, entitle the holder thereof to act as mine-boss in mines not generating fire-damp.

TABLE I—*Showing location of collieries in the Fourth Bituminous Mine District.*

NAME OF COLLIERY.	Name of operator	Location—County.	Name of superintendent.	Postoffice address.
Antrim Nos. 1, 2 and 3.	Fall Brook Coal Company,	Tioga,	James Pollock,	Antrim, Tioga county.
Arnot Nos. 1, 2 and 3,	Blossburg Coal Company,	"	R. T. Dodson,	Arnot, Tioga county.
Beechtree Nos. 2 and 3,	Rochester and Pittsburgh Coal and Iron Company,	Jefferson,	John Reed,	Beechtree, Jefferson county.
Barclay Nos. 1, 2 and 3,	Towanda Coal Company,	Bradford,	R. T. Dodson,	Arnot, Tioga county.
Cameron,	Cameron Coal Company,	Cameron,	H. S. Fleming,	Emporium, Cameron county.
Cascade Nos. 1 and 2,	Kaul & Hall,	Elk,	Andrew Kaul,	St. Mary's, Elk county.
Clarion Nos. 1 to 7,	N. W. Mining and Exchange Company,	Jefferson,	David Robertson,	Ridgway, Elk county.
Clermont,	Buffalo Coal Company	McKean,	J. H. Tate,	Clermont, McKean county.
Coal Glen Nos. 1 and 2,	Jefferson Coal Company,	Jefferson,	Austin Blakeslee,	Coal Glen, Jefferson county.
Dagus Mines Nos. 1 to 26,	N. W. Mining and Exchange Company,	Elk,	David Robertson,	Ridgway, Elk county.
Dixon,	Falls Creek Coal Company,	Clearfield,	Frank Morrison,	Victor P.O., Clearfield county.
Fall Brook No. 1 and 6,	Fall Brook Coal Company,	Tioga,	Anton Hardt,	Wellsboro', Tioga county.
Fall Creek,		Bradford,		
Fountain Colliery,	Grawer & Madill,	Centre,	John Madill,	Snow Shoe, Centre county.
Gurnee Nos. 1, 2 and 3,	Gaines Coal and Coke Company,	Tioga,	Patrick C. Smith,	Gurnee, Tioga county.
Hazel Dell,	Kaul & Hall,	Elk,	Andrew Kaul,	St. Mary's, Elk county.
Instanter,	Buffalo Coal Company,	McKean	John F. Keating,	Clermont, McKean county.
Kettle Creek Nos. 1 and 2,	Kettle Creek Coal Company,	Clinton,	G. L. Miller,	Bitumen, Clinton county.
London Mine,	Falls Creek Coal Company,	Jefferson,	Frank Morrison,	Victor P.O., Clearfield county.
Landrus,	Blossburg Coal Company,	Tioga,	R. T. Dodson,	Arnot, Tioga county.
Long Valley,	Long Valley Coal Company,	Bradford,	E. O. McFarlane,	Towanda, Bradford county.
Lucas Hill,	Lehigh Valley Coal Company,	Centre,	James F. Marsteller,	Snow Shoe, Centre county.
Morris Run No. 1, 2 and 3,	Morris Run Coal Mining Company,	Tioga,	W. S. Nearing,	Morris Run, Tioga county.
Mead Run,	N. W. Mining and Exchange Company,	Elk,	David Robertson,	Ridgway, Elk county.
Mine B,	Centre Coal Company,	Centre,	William Grawer,	Bellefonte, Centre county.
Renova,		Clinton,		
Rochester,	Bell, Lewis and Yates Coal Mining Company,	Clearfield,	L. W. Robinson,	DuBois, Clearfield county.
Sandy Lick,	" " "	"	" "	" "
Shawmut Nos. 1 and 2,	Shawmut Coal Company,	Elk,	E. P. Brinker,	
Snow Shoe Colliery,	Kelley Bros.,	Centre,	M. D. Kelley,	Snow Shoe, Centre county.
Sommerville,	J. L. Sommerville & Co.,	"	James L. Somerville,	" "
Sugar Camp Nos. 1, 2 and 3,	Lehigh Valley Coal Company,	"	James F. Marsteller,	" "
St. Mary's Nos. 1, 2, 3 and 4,	St. Mary's Coal Company,	Elk,	Joseph Eddy,	St. Mary's, Elk county.
Tannerdale,	" "	"	"	"
Williamsport Nos. 1 and 2,	Clearfield Coal Company,	Clearfield,	A. K. Jacobs,	Tyler, Clearfield county.
Whitehead,	Elk Coal and Coke Company,	Elk,	W. H. Taylor,	Caledonia, Elk county.

TABLE No. II.—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Fourth Bituminous Mining District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs of powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Antrim Nos. 1, 2 and 3.	Tioga county.	242,491		158,025	176	568		3		4	35		
Arnot Nos. 1, 2 and 5.	" "	242,020	2,140	228,528	193.25	686		6	1,227	3	65	2	250
Beechtree Nos. 2 and 3.	Jefferson county.	306,115		304,115	287			1		4	36		
Barclay Nos. 1, 2 and 3.	Bradford county.	54,281		50,266	211	127		1			28	1	
Cameron.	Cameron county.										6	1	100
Cascade Nos. 1 and 2.	Elk county.	95,000		94,048	299	138							
Clarion Nos. 1 to 7.	Jefferson county.	294,357		282,630	215	530	1	5	2,667	1	38	1	
Clermont.	McKean county.												
Coal Glen Nos. 1 and 2.	Jefferson county.	160,000		159,100	256	212	1		1,270	2	17		
Dagus mines Nos. 1 to 26.	Elk county.	339,029	4,864.10	339,248	240	534	1		1,8304	5	46	3	36
Dixon.	Clearfield county.	63,484		63,484	250		1	1			7		
Fall Brook Nos. 1 and 6.	Tioga county.	70,486		70,520	235	176		1		1	18	2	50
Fall Creek.	Bradford county.												
Fountain Colliery.	Centre county.												
Gurnee Nos. 1, 2 and 3.	Tioga county.	6,593		5,438	197	11			50		1		
Hazel Dell.	Elk county.										2	1	
Instanter.	McKean county.	11,483.50		11,483.50	276	26			10				
Kettle Creek Nos. 1 and 2.	Clinton county.	158,000		158,000	255	195		1	1,200		20		
Loudon mine.	Jefferson county.	46,064		46,064	232						4		
Landrus.	Tioga county.												
Long Valley.	Bradford county.	71,426		71,426	283	168			750	1	30		
Lucas Hill.	Centre county.	15,573.11		15,573.11	180	22					2		
Morris Run Nos. 1, 2 and 3.	Tioga county.	313,816			192.75	603	1	1		4	41	1	
Mead Run.	Elk county.	113,221		110,585	226	280			1,3064	2	16	1	
Mine B.	Centre county.												
Renovo.	Clinton county.												
Rochester.	Clearfield county.	504,720.19		502,320.19	240	600	2	1		6	50		

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TABLE No. III.—*Showing the number of each class of employes at each colliery in the Fourth Bituminous Mine District, during the year 1890.*

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
		Inside foreman or mine boss	Miners.	Miners' laborers.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendents, bookkeepers and clerks.	Total outside.	
Antrim Nos. 1, 2 and 3.	Tioga,	3	357	35	18	33	20	466	2	14	5	48	27	6	102	568
Arnot Nos. 1, 2 and 3.	"	1	357	. . .	31	57	35	483	1	16	3	83	66	4	173	656
Beechtree Nos. 2 and 3	Jefferson,	2	300	. . .	4	15	6	327	. . .	3	4	. . .	15	4	26	353
Barclay Nos. 1, 2 and 3.	Bradford,	1	77	. . .	5	13	2	98	. . .	3	2	1	20	3	29	127
Cameron.	Cameron,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Cascade Nos. 1 and 2.	Elk,	1	115	. . .	5	6	. . .	127	1	2	1	. . .	5	2	11	138
Clarion,	Jefferson,	3	424	. . .	8	25	3	463	1	8	3	. . .	49	5	66	529
Clermont.	McKean	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Coal Glen Nos. 1 and 2.	Jefferson	1	155	25	8	9	. . .	198	1	2	1	. . .	8	2	14	212
Dagus Mines Nos. 1 to 26.	Elk,	6	375	. . .	11	34	3	429	1	16	5	. . .	72	11	105	534
Dixon.	Clearfield,	1	62	. . .	1	7	3	74	. . .	. . .	. . .	. . .	4	2	6	80
Fall Brook Nos. 1 and 6.	Tioga,	2	100	14	10	20	5	151	2	3	3	12	2	3	25	176
Fall Creek.	Bradford,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Fountain Colliery.	Centre,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Gurnee Nos. 1, 2 and 3.	Tioga,	1	14	. . .	2	1	. . .	18	. . .	. . .	. . .	. . .	1	. . .	1	19
Hazel Dell.	Elk,	. . .	12	. . .	. . .	1	. . .	13	. . .	1	. . .	. . .	1	. . .	2	15
Instanter.	McKean,	1	18	. . .	1	2	. . .	22	. . .	. . .	2	. . .	2	. . .	4	26
Kettle Creek Nos. 1 and 2.	Clinton,	1	160	3	. . .	11	2	177	. . .	3	1	2	11	2	19	196
London Mine.	Jefferson,	1	48	. . .	1	3	1	54	. . .	1	. . .	. . .	4	1	6	60
Landrus.	Tioga,	1	12	. . .	9	1	. . .	23	. . .	2	. . .	. . .	1	. . .	3	26
Long Valley.	Bradford,	1	100	. . .	4	12	5	122	1	2	2	4	35	2	46	168
Lucas Hill.	Centre,	1	15	. . .	. . .	2	3	21	1	. . .	. . .	. . .	. . .	. . .	1	22
Morris Run Nos. 1, 2 and 3.	Tioga,	3	385	. . .	70	45	35	538	1	6	4	33	17	7	68	606
Mead Run.	Elk	2	220	4	4	13	. . .	243	1	4	2	. . .	28	2	37	280
Mine B.	Centre,	1	40	4	2	. . .	. . .	47	. . .	. . .	. . .	. . .	8	1	9	56
Renovo.	Clinton,	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Rochester.	Clearfield,	2	500	. . .	12	42	16	572	1	6	5	. . .	22	3	37	609
Shawmut Nos. 1, 2 and 3.	Elk,	1	140	. . .	. . .	10	3	154	. . .	1	. . .	1	9	2	13	167
Sandy Lick.	Clearfield,	1	80	. . .	4	5	3	93	. . .	. . .	. . .	. . .	5	. . .	5	98

Snow Shoe Colliery,	Centre,																													
Sommerville,	"																													
Sugar Camp Nos. 1, 2 and 3,	"			1																										
St. Mary's Nos. 1, 2, 3 and 4,	Elk,			1	167		5	7	13		193	1		4										3		59		252	
Tannerdale,	"			1	125		8	12	4		150	1		2	4									2		21		171	
Williamsport Nos. 1 and 2,	Clearfield,			1	17			2			20																	20	
Whitehead,	Elk,			1	95		4	8	1		109	1		3	2									2		48		157	
				1	60		5	6	1		73			1										1		7		80	
Total,				44	4,551	87	232	404	166		5,484	18		103	51	184	518	71								945		6,429	

TABLE IV— *List of Fatal Accidents occurring in and about the Mines of the Fourth Bituminous Mine District for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON.	Occupation.	Age.	Widow.	No. of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
March 7.	Owen Kelley,	Miner,	70	M.	2	Rochester,	Clearfield,	Killed by fall of rock, while mining at face of room. He neglected to a the sufficient number of props necessary to support the roof.
May 12.	William Morgan,	"	29	S.	. .	Sugar Camp No. 2,	Centre,	Was fatally injured while making an undercut. A piece of slate fell, crushing him so that death ensued in about an hour. The accident was of such a nature as to be unavoidable.
July 9.	Jackson Stephenson,	"	55	M.	. .	Dixon mine,	Clearfield,	Killed by fall of coal; he was mining under coal which had a loose end, with no sprags to protect himself.
11.	John Sherenkel,	"	17	S.	. .	Clarion No. 2,	Jefferson,	Killed by fall of rock, in his own room, the result of his failure to prop the room properly, after having been warned by several, including the mine boss. Further comment is unnecessary.
31.	Thomas Fleming,	Roadman,	50	M.	4	Rochester,	Clearfield,	He was a roadman and was killed by a trip of cars running over him.
Aug. 24.	Patrick Gagan,	Road cleaner,	15	"	1	Morris Run No. 1,	Tioga,	Fatally injured by fall of roof; died six days afterward.
Oct. 27.	John A. Pearson,	Miner,	20	S.	. .	Dagus No. 4,	Elk,	Fatally injured by explosion of powder through his own carelessness; died some ten hours after.
Dec. 8.	Adam Patterson,	"	40	M.	. .	Coal Glen,	Jefferson,	Instantly killed by fall of roof.

TABLE V—*List of Non-Fatal Accidents occurring in and about the mines of the Fourth Bituminous Mine District, for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 12,	Richard Law,	Miner,	21	S.	Shawmut,	Elk,	Ear nearly cut off by fall of coal.
Feb. 12,	William Chambers,	Driver,	22	S.	Arnot,	Tioga,	Back bruised by riding on top of full cars.
" 24,	M. McCormick,	Miner,	40	M.	"	"	Foot bruised by fall of coal.
Apr. 22,	A. Aneblis,	Miner,	30	S.	Clarion No. 1,	Jefferson,	Collar bone crushed between car and prop in his working place.
May 22,	George Brenham,	Miner,			Hazel Dell,	Elk,	Leg broken by fall of slate.
June 6,	Fred Kruger,	Driver,			London Mine,	Jefferson,	He was a driver, and his leg was broken by a pit car leaving the track and catching his leg between car and rib.
July 1,	John Rucenski,	Miner,			Antrim No. 1,	Tioga,	Leg broken by fall of slate.
" 1,	William Robinson,	Miner,	40	M.	Antrim No. 5,	"	Collar bone broken by fall of slate.
" 7,	John Smith,	Miner,	40	M.	Morris Run No. 1,	"	Leg broken by fall of coal.
Aug. 2,	Charles Ravie,	Miner,	28		Clarion No. 2,	Jefferson,	Collar bone broken by fall of coal.
Oct. 14,	John Whittle,	Driver,	26	S.	Arnot,	Tioga,	Leg squeezed between car and rib.
" 25,	Charles Neiduck,	Miner,	40	M.	Antrim No. 2,	"	Both legs and two ribs were broken by fall of stone. He failed to put up sufficient props in his working place.
Nov. 1,	M. Mannix,	Miner,	41	M.	Arnot,	"	Knee bruised by falling in front of loaded car in his working place.
" 6,	Charles McHugh,	Miner,	38	M.	Rochester,	Clearfield,	Back bruised by getting in the way of a loaded trip when in motion on the hauling way.
" 10,	Lonie Shephard,	Driver,			Fall Brook,	Tioga,	Leg broken by falling in front of his trip when the cars were in motion.
" 14,	Frank Tomney,	Miner,	39	M.	Clarion No. 2,	Jefferson,	Collar bone broken by fall of coal in his working place.
" 17,	John Rennie,	Miner,	62	M.	Arnot,	Tioga,	Leg broken by fall of coal in his working place.
" 22,	Mike Shepolo,	Miner,	21	S.	Clarion No. 2,	Jefferson,	Arm broken by fall of rock in his working place.
" 29,	J. H. Johnson,	Spragger,	30	M.	Arnot,	Tioga,	Leg bruised by being caught between two cars.
Dec. 19,	M. Firlo,	Miner	40	M.	Clarion No. 1,	Jefferson,	Collar bone broken by fall of coal in his working place.
" 20,	Andrew Grims,	Miner,	38	M.	Kettle Creek,	Clinton,	Arm broken and crushed by being caught between car and prop in his working place.
" 31,	Andrew Benson,	Miner,	30		Dixon Mine,	Clearfield,	Bruised on head by fall of coal in his working place.

FIFTH BITUMINOUS DISTRICT.

(FAYETTE AND SOMERSET COUNTIES.)

Hon. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: As ex-mine Inspector of the Fifth Bituminous district, I herewith have the honor of presenting to you a report of the condition of the mines in the Fifth Bituminous district, for the ten months of 1890, whilst I was in office. I also submit an account of the Hill Farm mine disaster.

The usual tables and other information will be supplied by Mr. Wm. Duncan, the present mine Inspector of the Fifth Bituminous district.

In presenting this report, or rather my portion of it, I had intended pointing out a few of the many defects in the "mining law," but as the attention of our legislators has already been drawn to its deficiencies and a commission appointed specially for the purpose of ascertaining what the deficiencies are and how they may be best rectified, any further comment by me will be unnecessary.

Yours very respectfully,

FRED. C. KEIGHLEY,

Ex-Mine Inspector, Fifth Bituminous District, Pa.

THE HILL FARM DISASTER.

Owing to the great loss of life resulting from the fire at the Hill Farm mine, I have concluded to give an account of that accident under a separate head.

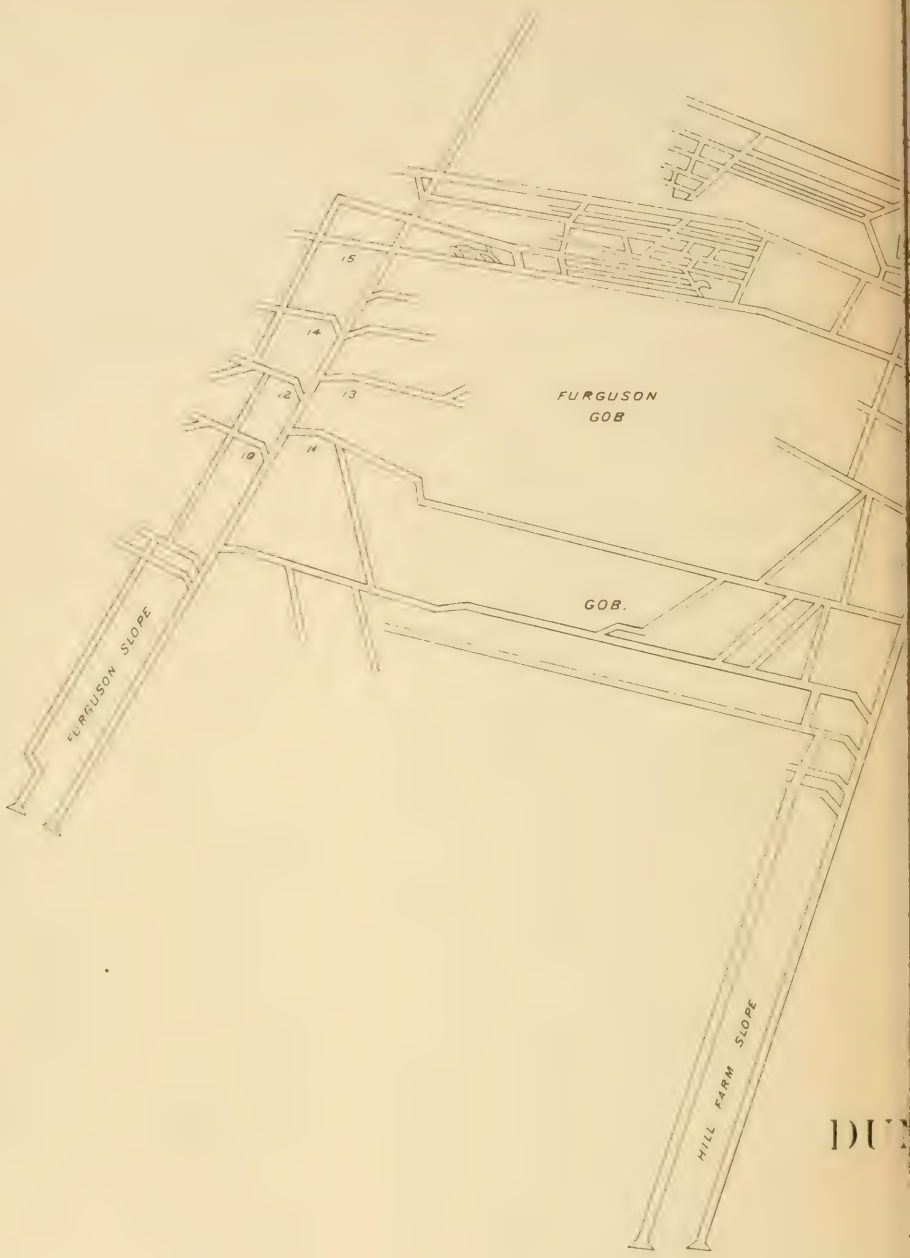
The Hill Farm mine is owned by the Dunbar Furnace Company, of Dunbar, Fayette county, Pa., and the product of the mine is used in manufacturing coke for consumption in the two blast furnaces owned by said company, and located in Dunbar. The Hill Farm mine is also located in Dunbar township, and probably about one mile west of the furnace stacks, and transportation is effected by means of a narrow-gauge railroad, the property of the company.

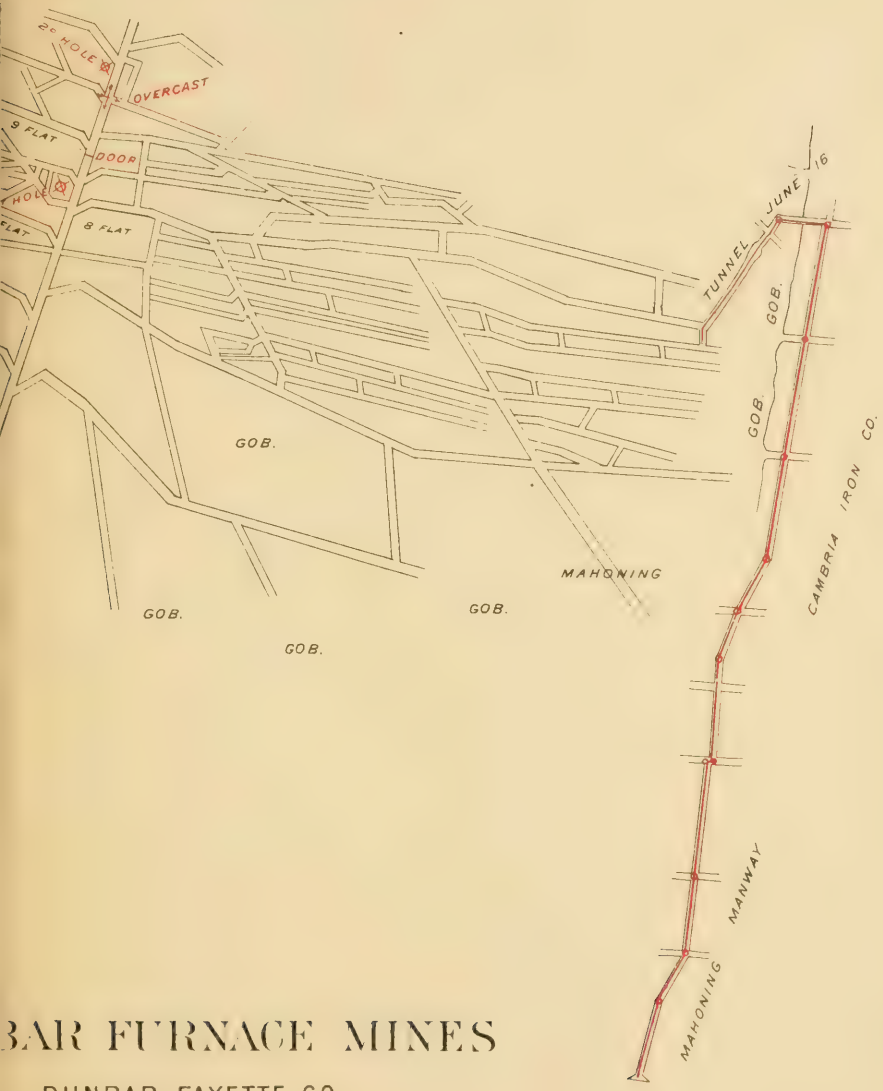
The mine is a slope opening, on the dip of the coal driven down almost squarely on the butts; a short distance south of the slope a manway is driven down, in a measure parallel to the slope, and it was intended as an exit for the miners employed therein. About 3,100 feet from the mouth of the slope there is a flat heading known as No. 9 flat or Ferguson flat. This heading is turned off from the Hill Farm slope to the left or south and runs 2,000 feet to what is known as the Ferguson or Parish slope, and affords another means of exit or escape for the miners. The Ferguson mine is opened up much in the same manner as the Hill Farm mine, in fact, for many years, or since the Dunbar Furnace Company purchased the Ferguson mine, these openings have been considered as but one mine, with two hoisting ways and were operated under one management. The Ferguson manway is the main intake for both openings, and after the Ferguson workings were ventilated, part of the air current was allowed to return up the Ferguson slope, and the remainder was taken down the Ferguson or No. 9 flat to the Hill Farm workings, and taken over the Hill Farm slope by means of an overcast (see plan) to the right of the slope, and that part of the workings was ventilated with a continuous current, and then the air passed out on the Hill Farm slope as the return.

At the overcast a small split (1,000 feet per minute) was taken out and led down behind a brattice on slope (see plan), and then allowed to pass off up the slope to join the main return, as per plan.

A short distance above No. 11 flat, Hill Farm, a bore-hole was put down from the surface for the purpose of handling the water in the dip workings to better advantage. This hole was 520 feet in depth, and was completed or bored through the coal on the Friday preceding the accident, and the hole came down within eleven feet of the slope. On the Monday morning following, June 16, there remained but two feet of coal between the bore-hole and the slope (it appears that the hole was opposite an offset in slope, thus reducing the original distance), and Mr. Lang, the superintendent of the mines, gave orders for the hole to be opened. The work was performed by John Kernin, and he suddenly struck into the bore hole with his pick, liberating at that instant a large quantity of water which was standing in the hole (it was almost full of water), and a few minutes later, Willie Hays, learning of the sudden inflow of water, rushed down the slope to warn some miners (six) who were working in the dip, of the possible danger from water, and in doing so as he passed the drill hole, ignited the gas with his open light, which it seems was mingled with the water issuing from the drill hole. This flame reached across the slope and set fire to the brattice cloth, and in a few minutes the slope became a seething body of flames.

The overcast at No. 9 flat was built of wood (as overcasts generally are), and, according to testimony before the coroner's jury, this overcast was one of the first things to succumb to the flames that shot up the


15
14
12
13
10
14
FURGUSON
GOB
GOB.
FURGUSON SLOPE
HILL FARM SLOPE



BAR FURNACE MINES

DUNBAR, FAYETTE CO.

PENNA

By WM. DUNCAN.
Mine Inspt 5th B. Dist.
Uniontown, Penna.

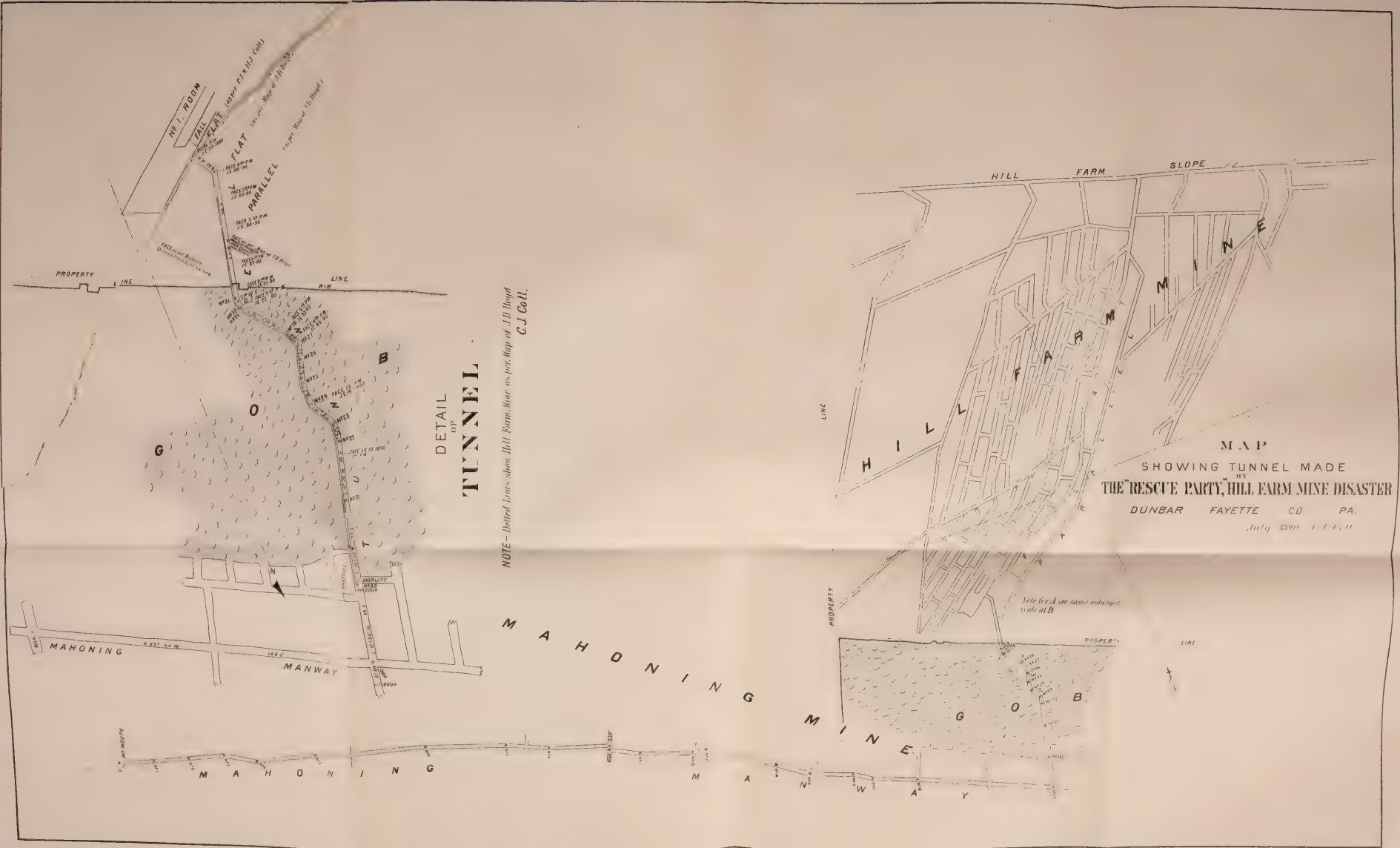
slope, this, of course, would at once cut off all air to the men in the dip and on the right of the slope, twenty-nine in all, including Willie Hayes. How long those men lived and what route they took to escape, if they attempted to do so (there are evidences that at least some did attempt to rush up the slope) is yet a matter of uncertainty and will remain so until the burning mine, which is now sealed up, is re-opened.

It is stated by the men who were on the left hand of the slope (all of whom escaped), that the drill hole was opened up about eleven o'clock, and as I did not reach the mine until about three o'clock p. m. I know nothing personally as to how the accident occurred and what I have related relative to it so far is what was developed at the inquest.

On the day of the accident I was about to leave this part of my district for a week to go to Somerset county, and took the 2.20 p. m. train for Connellsville, and while on the train, heard rumors of an accident at the Hill Farm mines. I at once determined to ascertain what foundation there was for the report and accordingly got off at Ferguson mine where I was informed that there had been an explosion in the Hill Farm mine (this I afterwards found to be false as it was really a fire) so I at once went over to that mine and saw a dense volume of smoke pouring out of the slope. As the steam line to the pumps runs down the slope, I at once gave orders to crowd on all the steam they possibly could in order to make as much of a current as possible to aid in clearing out what I at that time supposed to be after-damp resulting from an explosion, and then walked to the manway, and made my way down in company with some person whom I connot at this time place. We probably got down some 1,100 or 1,200 feet and there struck smoke again, and in this smoke I found Mr. Frank A. Hill, general superintendent, Thomas Evans, Hugh Doran, assistant mine-boss, and one or two miners engaged in putting up brattice-cloth. From Mr. Hill I learned that the party had succeeded in getting down as far as the Ferguson flat and had found two bodies, those of Sherin and Hays, but unable to either get any further or remove the bodies owing to the dense volumes of smoke, they retraced their course and went back up the Hill Farm manway to the point where I found them. For some time after I joined Mr. Hill and his party we kept up the work of bratticing, and in course of an hour or so we again reached the bodies of Sherin and Hays. Sherin's body was cold and stiff, but Hays' body was quite warm, however all attempts to resuscitate it were futile, and the bodies were carried out today light by men who came down to assist in the search. Our party then went on down the manway and we finally reached the working places on No. 9 flat, these were thoroughly examined by Doran and myself and no person found or any bodies; however we did find a live mule.

After having explored that side of the mine, we then attempted to reach the slope by opening the door on No. 9 flat, but owing to the dense smoke, failed to even reach the door after several desperate attempts.

While we were engaged in that manner, we suddenly found that the smoke and black-damp, or after-damp, was rapidly gaining on us and before we could realize what had happened our lights were all extinguished. We the (five of us) got down on the track and crept along with one hand on the T iron rail for some distance until we reached a point where we could hail a man whom we had stationed some distance back up the butt heading with a light for such an emergency, he brought his lamp and we then all retreated to No. 7, or Ferguson flat, here we held a consultation, and after several more attempts to go down to flat No. 9, and finding the smoke rapidly gaining on us, we decided to open a brattice in a cut hole from the sump to the slope, this we did, and I then went out to the side of the slope and there heard the fire rushing up the slope. I went back a few steps in the cut hole and there saw the flames going up the slope and called Inspector William Jenkins, who, by this time had joined our party with many others; he and several others saw the flames and it was at once decided to replace the stopping, which was done without loss of time. During the time this stopping was being replaced and some others being erected as a further barrier to the progress of the fire, we were suddenly informed that the manway above was blocked with dense clouds of smoke and that it was impossible to retreat that way, so the whole party, about thirty in number by this time, retreated by the way of No. 9 flat to Furguson mine and then went out to the Hill Farm pit mouth. Another consultation was held as soon as we got out, (about 10 p. m. that evening) and it was decided to abandon all attempts at a rescue by way of either Ferguson or Hill Farm mines and all attention was now turned towards the Mahoning mine and men were sent over there to commence operations, which were carried on all night. Next day about noon another consultation was held which was attended by seven mine Inspectors, many mine officials and mine-bosses of experience and all agreed (with one exception) that the rescue could only be made from the Mahoning mine, so a fan was erected there, and work carried on unremittingly from the 16th of June until the evening of July 2, 1890. At first it was thought that the rescue party could reach the Hill Farm workings in a few days by driving alongside of ribs that were supposed to have been left in, but they soon discovered that there were no ribs or pillars and that the whole distance from the Mahoning manway to the Hill Farm mine line was nothing but fallen ground or gob. It was 390 feet in all before coal was struck that might be called solid, and the heading was run about 140 feet more in this coal before the Hill Farm mine workings were reached, making a total distance of 530 feet. The driving of that heading was a most tedious and dangerous operation and many a shift of six hours hard labor advanced it but a few feet, sometimes a sliding gob would be struck, that kept the men shoveling for hours without gaining a foot. On the evening of July 1 (8.30 p. m.) a bore hole was now into the Hill Farm mine and bags


No 1. ROOM
TAIL
FLAT
FLAT
PARALLEL
PROPERTY LINE
LINE
RIB
DETAIL OF TUNNEL
NOTE - Dotted Lines show Hill Farm Mine as per Map of J.D Boyd & C.J Coll.
MAHONING
MANWAY
MAHONING MINE
HILL FARM SLOPE
HILL FARM MINE
PROPERTY LINE
MAP
SHOWING TUNNEL MADE
BY
THE "RESCUE PARTY," HILL FARM MINE DISASTER
DUNBAR FAYETTE CO PA.

The only bodies recovered were those of Hays and Daniel Sherin, and while the efforts of the rescue party were in one sense a failure, yet it proved that there were no living persons in the mine, and until such proof was obtained, it would have been inhuman to give up the search and work. It is now evident that all the miners attempted to reach the slope, and in so doing were overcome with smoke and perished. Even if the miners had made their way up to the extremity of No. 8 flat as it was hoped they had done, it is very doubtful if they would have been saved, for every corner and crevice seems to have been filled with smoke and carbonic acid gas. The company spared no expense in the efforts at rescue, and the official force of the mine stood right up to the ordeal, and no man can say that Mr. Hill, the general superintendent, Mr. Long, superintendent, Thomas Evans, mine-boss, Hugh Doran, assistant mine-boss, Thomas and Daniel Sherin, fire-bosses (the latter lost his life with Hays, Sr., in an attempt at rescue), showed the white feather, they all risked their lives and worked almost incessantly night and day. This can be said of many others, both officials and miners, from other mines. The H. C. Frick Coke Company, through its general manager, Thomas Lynch, rendered valuable aid by furnishing fans and sending their best foremen and miners, other firms of the coke region sent representatives and loaned appliances and material, particularly the Cambria Iron Company.

The following mine Inspectors were on the ground, and worked with the rescue party:

Henry P. Louttit, First Bituminous district; William Jenkins, Second Bituminous district; Thomas K. Adams, Third Bituminous district; Fred C. Keighly, Fifth Bituminous district; Josiah Evans, Sixth Bituminous district; James Blick, Seventh Bituminous district; Austin King, Eighth Bituminous district; J. J. Davis, ex-mine Inspector, Fifth Bituminous district; Robert Watchorn, secretary, and Peter Wise, officials of the Knights of Labor, rendered valuable aid. There were many others who deserve mention but space can hardly be found for all.

By this sad disaster 31 men lost their lives, and for years to come it will cast a gloom over the coke region, while the families of those who perished will probably never forget the horror and grief it brought to them.

The above account of the accident was written by me soon after it occurred, and I thought it best to allow it to remain (unchanged) as it was. A few days after the abandoning of the attempt to reach the imprisoned miners or their bodies, an inquest was held, which lasted several days.

The verdict was a charge of criminal negligence against Mr. Robert Lang, superintendent, and information was shortly afterwards made against him by one of the widows, and a bill filed before the grand jury,

which ignored it, thus ending the prosecution. It is a difficult matter to understand why Mr. Lang was accused of criminal negligence, and it would seem to fair-minded persons that the worst that could be charged against him would have been error of judgement, something which any of us is liable to. During the month of August the man-way of the Hill Farm mine was opened and another attempt made to enter the workings, but after several days' labor it was found that the fire was still raging, and the mine was closed up again. Several weeks afterwards the mine was again opened, this time with better success and considerable headway was made, for fully 1,000 feet of the slope was sectioned off; however, after going about 300 feet more the fire broke out again, and for several weeks the work was abandoned temporarily, since then, the work has been carried on again with vigor and good headway made considering the difficulties encountered, but a great deal of work still remains to be done before the point where the bodies are supposed to be can be reached.

The company and their officials deserve great credit for the perseverance with which they have carried on this work, and it cannot be said they are simply carrying on the work of reopening from mercenary motives, as they could easily have worked the Hill Farm coal from the Ferguson mine and left the bodies for some future generation to recover or discover.

I am informed that the Dunbar Furnace Company has recently given the widows sums of money in proportion to the number of victims in each family, and that the same has been accepted as a settlement of the respective claims. In review of the evidence at the coroner's inquest, it seems that there was no large quantity of fire-damp at the bore-hole, but that there was sufficient to set the brattice-cloth on fire and the flames from that probably set on fire the trip of empty cars and these in turn set fire to the coal.

The probability is that if Willie Hays had come down a few minutes sooner, the fire-damp would not have ignited, as it would not have diffused sufficiently, this is in a measure proved by the fact that Kerwin did not ignite the gas when he first struck into the hole; again if Hays had come down a little later the probability is that the fire-damp would have become so diluted that it would not have fired, so it seems that the accident was the result of a combination of circumstances.

It is an unfortunate thing that the bore-hole was tapped or opened up during working hours, but we can all see how accidents can be avoided after they have happened, and the question is, how many would have proceeded in a different manner from Mr. Lang?

At the coroner's inquest many testified that they would have tapped the hole only when the miners were out. Others again would have tapped it at any time, but would have used safety lamps during the tapping. Still others would have done the work with any kind of a light

but would have kept a bore-hole ahead; however, these parties all had the advantage of seeing the disastrous effects of tapping the hole at Hill Farm before being asked for an opinion, and a man would be a fool to state, after an accident, that he would have proceeded in the very manner that caused that accident.

After leaving the causes that led to the Dunbar disaster, it is evident to the writer that the only safe way of approaching a bore-hole by an underground entry or heading, is to stop work on the heading when it is within twelve to fifteen feet of the hole to be tapped and take out all the men excepting those sufficient to do the tapping and give those men safety lamps and let them keep loose holes as far in advance as possible. In this way, with careful men, there could be no great danger.

There are many things to be learned from the Dunbar accident, a few of which I will give below:

First. That long slopes are a source of great danger.

Second. That steam lines laid in such slopes greatly increase the danger by keeping everything in and about them so heated that the timber, etc., is often but a few degrees below the point of ignition and once a fire is kindled it is impossible to control or extinguish it until great loss of life or property has occurred.

Third. That wooden over-casts are highly dangerous in any mine, and especially so when thrown across slopes as in the Hill Farm mine.

Fourth. That continuous air-currents in mines should be abolished as they are another source of great danger.

Fifth. That fan ventilation is as yet the only mode of ventilation that ought to be tolerated.

Sixth. That no matter what change is contemplated in a mine or its adjuncts, the results should be thoroughly considered, and in a measure anticipated, before the change is made, for often what is apparently a trifling matter develops a train or combination of circumstances fraught with disaster.

To illustrate this last suggestion take the Hill Farm mine for instance.

A new management is installed, and that management decides that the steam line on the slope should be abolished or abandoned; to effect that change, a bore-hole is started. The management further decides that the air-current should be kept close to the face of the dip. To do that, a line of brattice is run down the slope and improvement is noted. Now both of these changes are for the better, and while to all appearances neither carry with them any danger, and in fact bear no relation whatever to each other, yet another move brings disaster—the tapping of that hole. For in that hole, gas is penned up, and just at that moment when it reaches the proper mixture with the atmosphere, a boy with a naked light appears—he being bound on an errand of mercy—to warn his fellow miners of danger from water, rushes into that atmosphere and brings about the death of those he heroically attempted

to save. All this is hard to understand and still harder to bear. I know personally that the management of the Hill Farm mine had, in the person of its new manager, Mr. Frank A. Hill, a man of ability, who, if fortune had permitted, would have made the Hill Farm mine a safe mine and a profitable one as well, and no one will contradict it either, who knows the man.

Great injustice has been done to many connected with Hill Farm mine, and injury done by a few unreasoning, ill-thinking, ignorant and spiteful men that can never be forgiven or forgotten.

Accidents have happened in the past and will happen in the future, and none feel as deeply as those who have been so unfortunate as to be connected with them and see the horrible sights and grief of the afflicted ones. It is enough to have to bear that, without being slandered and abused for what they were not responsible for.

My successor in office, Mr. Wm. Duncan has appended a list of names of the victims of Hill Farm mine disaster, and also furnishes a map of the mine workings, as referred to heretofore in this article.

FRED. C. KEIGHLEY,
Ex-Mine Inspector.

Adelaide mine.—Shaft opening located on the P., McK. & Y. R. R., opposite Broadford, Fayette county, Pa. Operated and owned by the H. C. Frick Coke Company. During the year 1890, a pair of headings were driven through into the Trotter mine workings, making another outlet for both of these mines. This mine is well ventilated and in good condition.

Atlas mine.—Located near Dunbar, Fayette county, now owned by the Cambria Iron Company. This mine is in rather poor condition and not improving very fast owing to the great difficulty experienced in keeping the water out of the dip workings. Ventilation fair.

Anchor mine.—Near Dunbar Pa., is owned by the Pennsylvania Mining and Manufacturing Company. Condition of mine is fair. Posting of rooms in this mine was not quite satisfactory, but it seemed to be more the fault of the miners than any one else, as plenty of posts were furnished.

Berlin mine.—Located on the Berlin branch, B. & O. R. R., near the village of Berlin, Somerset county, Pa. A small mine owned by D. B. Morgan & Co. This mine is well ventilated in a condition creditable to its owners and many a larger mine is in far worse shape.

B. & O. mine.—A new mine opened near the Connellsville depot of the B. & O. R. R. Owners, the B. & O. R. R. Co. The product of this mine is all used in coaling the locomotives of its owners. As yet this mine is not fully developed and the ventilating arrangements are not as good as I would like to see; however, this will be remedied as the work advances, so I am told.

Buffalo mine.—Located on the Berlin branch, B. & O. R. R., near Garrett Station, Somerset county, Pa. Owned by the Buffalo Coal and Coke Company. Owing to some financial difficulty, but little work was done during the year. This mine was improving rapidly and its general condition is good.

Chester mine.—A new mine opened during the year 1890, on the line of the Brownsville branch of the P. V. & C. R. R. Owned by Harry Taylor and E. A. Humphrey. As yet this mine does not come under the provisions of the mining law, but a certificated mine-boss is employed.

C. & E. L. mine.—Located on the Salisbury branch, B. & O. R. R. near Myersdale, Somerset county, Pa. Owned by the Cumberland and Elk Lick Coal Company. The ventilation of this mine is good and it is the best managed mine in Somerset county, Pa.

Clinton mine.—Located on the Mt. Pleasant branch, B. & O. R. R., is owned by the H. C. Frick Coke Company. The coal from this mine is now taken out by way of the Valley mine of the Frick Coke Company.

Coalbrook mine.—Located on the P. & S. W. R. R., near Meyers, Pa. Owners, the McClure Coke Company. This mine has always been in good condition at the time of my visits.

Clarissa mine.—Located on a branch of the P., McK. & Y. R. R., near Vanderbilt, Pa. Drift opening and natural ventilation. Mine usually in good condition.

Cora mine.—Located on a branch of the B. & O. R. R., near Dawson, Pa. Owners, J. Newmeyer & Sons. A small mine with drift opening. Condition quite fair.

Cassellman mine.—Located on the B. & O. R. R., near Garrett, Pa. Owners, Cassellman Coal Company. Slope opening with furnace ventilation. There is room for improvement in this mine, especially in ventilation.

Cochrane mine.—Near Salisbury, Pa. This mine has not been in operation for several years, owing to some dispute.

C. and E. L. Grassy Run mine.—Located on the Salisbury branch, B. & O. R. R., near Meyersdale, Pa. Owners, C. and E. L. Coal Company. Drift opening, double-entry system and furnace ventilation. Condition generally good.

Cumberland mine.—Located on the Grassy Run branch, B. & O. R. R. This mine was abandoned during this year as the coal was exhausted.

Cal. T. Hay mine.—On the Grassy Run branch, B. & O. R. R. Drift opening, single-entry system and furnace ventilation. Condition only fair.

Davidson shaft.—Located midway between the B. & O. and P. S. W. R. R., near Connellsville, Pa. Owners, H. C. Frick Coke Company. Shaft opening, double entries and fan ventilation. Mine in good condition and well ventilated.

Diamond mine.—Located on B. & O. R. R., at McClure station, Pa. Owners, McClure Coke Company. Drift opening. Condition fair.

Dexter mine.—Located on B. & O. R. R. near West Overton station. Owner, J. R. Stouffer. Drift opening, natural ventilation and single entries. Condition only fair.

Eagle or Summit Nos. 1 and 2 mines—Located on the Mt. Pleasant branch, B. & O. R. R. Owned by the H. C. Frick Coke Company. Drift openings, double entries and furnace ventilation. Mines in excellent condition.

Foundry or Summit No. 3.—Really included in the above mines, as the workings are intermingled.

Fountain mine.—Located on the Mt. Pleasant branch of the B. & O. R. R. Operated by E. A. Humphrey. This mine is a drift opening and is ventilated by a furnace. This mine has been on fire for several months and is consequently idle. All efforts to extinguish the fire have been unsucessful and I am afraid that its owners have a contract on their hands, owing to the light covering over the coal, which makes it a very difficult matter to exclude the air.

Furnace mine.—Near Everson has not been operated for several years.

Frick mine.—On Mt. Pleasant branch B. & O. R. R. is now abandoned

Franklin mine.—Located on the Mt. Pleasant branch, B. & O. R. R., at Owensdale, Pa. Owners B. F Keister & Co. Drift openings, furnace ventilation and single entries. This mine is in excellent condition.

Fort Hill mine.—Located on P., McK. & Y. R. R, near Dawson, Pa. Owner W. J. Rainey. A new fan is being erected here. The mine is usually in very good condition.

Fairchance mine.—Near Fairchance, Pa. Drift opening and natural ventilation. The condition of this mine is improving. Owners, Fairchance Furnace Company.

Flog Hill and Fair View mines.—Located on the Grassy Run branch of the B. & O. R. R., is owned by the Fairview Coal Company. Drift openings, single entries and natural ventilation. Condition only fair.

Fayette mine.—Located on the P. S. W. R. R., near Oliphant, Pennsylvania, owned formerly by the Fayette Coke and Furnace Company, now the H. C. Frick Coke Company, which is now making numerous and much needed improvements. A fan has been erected and the condition of the mine in general is improving.

Grindstone shaft.—Located on the P. V. & C. R. R., at Grindstone Station, Pennsylvania, and owned by the Redstone Coal, Oil and Coke Company. This mine has two shaft openings and as yet is not fully developed. So far as can now be seen the shaft's location is an unfortunate one as it went down in troubled ground, making its development both difficult and tedious.

Gassman or Cumberland and Summit Nos. 1 and 2 mines.—Located on the Salisbury branch, B &. O. R. R. Drift openings whose condition

is only fair and improvement is much needed in ventilation. Operators, Cumberland and Summit Coal Company.

Grace mine.—Located on the P. S. W. R. R., at Moyers, Pennsylvania, and owned by W. J. Rainey. Slopes, openings, double entries and fan ventilation. This mine is an extensive one and is generally in fair condition.

Great Bluff mine.—Located on the P. S. W. R. R., near Dunbar, Pennsylvania. Owners Henry Taylor and E. A. Humphrey. A drift opening working less than ten men, therefore not coming under the provisions of the mining law.

Grassy Run mine.—Located on the Grassy Run branch of the B. & O. R. R., at Grassy Run, Pennsylvania; owners, Grassy Run Coal Company. Drift opening, natural ventilation and double main heading. This mine needs a third opening and either a furnace or fan ventilation.

Henry Clay mine.—Located on the B. & O. R. R., at Broadford, Pennsylvania. Owners, the H. C. Frick Coke Company. Slope opening, fan ventilation, double entries and good roads. This mine is well ventilated and in fine order.

Hill Farm mine.—Located near Dunbar, Pa., and owned by the Dunbar Furnace Company. This is the mine in which thirty-one miners lost their lives by a fire in the underground workings, June 16, 1890. For further particulars see account of accident in other portion of this report.

Home mine.—Located on the P. S. W. R. R., near Emerson, Pennsylvania. Owners, Stauffer and Wiley. Drift opening. This mine is in fair condition, but as it employs less than ten men it does not come under the mining law.

Hamilton mine.—Located on the Grassy Run branch of the B. & O. R. R., at Grassy Run, Pennsylvania. Owners, Hamilton & Cochran. Drift opening and natural ventilation. This mine will soon be abandoned and the work now being done is on the pillars only.

Hocking mine.—Located on the B. & O. R. R., at Grassy Run, Pennsylvania. Operator, John Hocking. Drift opening, natural ventilation and single entries. The ventilation of this mine requires improvement.

Junction mine.—Located on the P., McK. & Y. R. R., near Vanderbilt, Pennsylvania. Owned by Joseph Laughrey & Co. Drift opening, natural ventilation and single entries; ventilation is regular as all natural ventilation is, In other respects the mine is in very fair condition.

Jackson mine.—Located on the B. & O. R. R., near Dawson, Pennsylvania. Owners, James Cochran & Sons. Drift opening, formerly ventilated by natural forces, but now by fan. The fire which has been raging here for several years is now pretty well controlled and new entries are being driven in the solid coal, which is being opened out on the double-entry system.

Kyle Farm mine.—Located on the P. S. W. R. R., near Fairchance, Pa. Now owned by the H. C. Frick Coke Company, which has made numerous

HILL FARM MINE.

improvements since it came into possession. The mine has drift openings, which were formerly ventilated by natural forces, but now by fan.

Keystone mine.—Located on B. & O. R. R., near Myersdale, Pa. Owners, Keystone Coal Coompany. Drift opening, natural ventilation and syphon drainage Only fourteen or fifteen miners are employed, but if more are employed improvements in ventilation will be required, and drainage should also have more attention than it has heretofore received.

Leith Shaft.—Located on P. S. W. R. R., Leith, Pa. Owners, H. C. Frick Coke Company. Shaft opening, double entries, ventilated by a 20-foot Giubal fan. Ventilation is good, but there have been some outbursts of fire-damp during the year; however, it was carefully handled and driven out. This mine is very difficult to manage owing to soft bottom, tender roof and poor plans first adopted, which the present owner is in no way accountable for.

Larimer mine or Banning mines.—Located on the P., McK. & Y. R. R., near Jacob's Creek, Pa. Owned by Morgan, Moore & Bayne, of Cleveland, Ohio. Drift opening, double entries and fan ventilation. This mine is in very fair condition.

Lemont mine.—Located on the P. S. W. R. R., at Lemont Furnace, Pa., and owned by the McClure Coke Company. This mine is improving fast, and an 18-foot fan has been erected. New engines and numerous other improvements have been made.

Lemont mine No. 2.—Located on the B. & O. R. R., near Lemont Furnace, Pa., and owned by the McClure Coke Company. Slope opening with double track and double entries. This mine promises to be a good one, but I am sorry to see such a fine coal field tapped by another slope when a fine shaft location could be had.

Leisenring shaft No. 1.—Located on branches of the B. & O. and P. S. W. R. R., at Leisenring, Pa. Owners, H. C. Frick Coke Company. This mine has been undergoing a thorough overhauling during the past twelve months. A sudden outburst of fire-damp occurred in this mine during the year, but it was discovered in time to prevent any serious results, however, it was several days before it was gotten under control. One peculiarity of this influx of fire-damp was, that it came from the bottom whereas this gas generally comes from the roof in the Connellsville region. The ventilation of this mine is good.

Leisenring shaft No. 2.—Located on a branch of the P. V. & C. R. R., at West Leisenring, Pa. Owners, H. C. Frick Coke Company. Many improvements have been made at this mine since it passed into the hands of its present owners. Ventilation and condition greatly improved.

Leisenring shaft No. 3 or Monarch mine.—Located on a branch of the P. S. W. R. R. Owners, H. C. Frick Coke Company. This is the finest mine in Fayette county.

Lynn or Hanna mine.—On the P. V. & C. R. R., a small operation

owned by the Hanna Brothers. Drift opening with oceans of room for improvements.

Morrell mine.—Located on branches of the B. & O. and P. S. W. R. R. Owners, Cambria Iron Company. Slope opening with three heading system and split air currents. Ventilation good.

Mahoning mine.—Located near Dunbar, Pa. Owners, Cambria Iron Company. A slope opening which is generally lying idle on account of water in the dip workings. This is the mine from which the heading was driven into the Hill Farm mine at the time of the disaster at that mine.

Mount Braddock mine.—Located on the B. & O. R. R., at Mount Braddock, Pa. Owners, R. Hogsett & Co. Slope opening. The condition of this mine has improved considerably during the year.

Morgan mine.—Located on the Mt. Pleasant branch, B. & O. R. R. Owners, H. C. Frick Coke Company. Drift opening, furnace ventilation and single entries. Condition all that can be expected of a mine that is about worked out.

Nellie drift and shaft mines.—Located on a branch of the P., McK. & Y. R. R. Owners, Brown & Cochran. Openings, shaft and drift. Ventilation and condition quite good.

Painter mine.—Located on the Mt. Pleasant branch, B. & O. R. R. Owners, McClure Coke Company. Drift opening, well ventilated and drained, with other conditions good.

Pennsville mine.—Located on the P. S. W. R. R., near Pennsville station, Pa. Owners, Dillinger & Sherrick. Slope opening, fan ventilation and single entries. Ventilation not as good as it should be with the means at hand.

Percy mine.—Located on the B. & O. R. R., near Frost station, Pa. Owners, Percy Mining Company. Slope opening with double entries. A fan was erected during the year and its owners evince a disposition to do all that lays in their power to make the mine safe.

Parrish mine.—Located on P. W. S. R. R., at Ferguson station, Pa. Owners, Dunbar Furnace Company. This mine is connected with the ill-fated Hill Farm mine and will be described under that head in another portion of this report.

Paul mine.—Located on a branch of the P., McK. & Y. R. R., near Vanderbilt, Pa. Owner, W. J. Rainey. Slope opening with double entries. A fan was erected here during the year and other improvements noted in the condition of the mine.

Plummer mine.—Located on the P. S. W. R. R., near Connellsville, Pa. Owners, H. C. Frick Coke Company. Drift opening, with fan ventilation and rope haulage. This mine is in very fair condition.

Pine Hill mine.—Located on the Berlin branch B. & O. R. R., at Pine Hill station, Somerset county, Pa. Owners, Pine Hill Coal Company. Drift opening, in miserable condition, and from present appearances likely to be so for some time to come, as its owners are in difficulty.

MAHONING MINE.

REDSTONE SHAFT

Redstone mine.—Located on the P. S. W. R. R., Brownfield station. Owners, H. C. Frick Coke Company. Slope opening, double entries and fan ventilation. This mine is in good condition in every respect.

Rist mine.—Located on the Mt. Pleasant branch, B. & O. R. R. Owners, H. C. Frick Coke Company. Slope openings, double entries and fan ventilation. This mine is in excellent condition and well ventilated.

Rolling Mill mine.—New Scottdale, Pa. This mine has been abandoned for several years, but it is now being put in shape for operating again.

Rainbow mine.—Located on the P., McK. & Y. R. R., at Whitsett, Pa. Owner, Rainbow Coal and Coke Company. Drift opening, single entries and natural ventilation. Improvement is required here in several respects, especially in ventilation.

Sterling mines No. 1 and 2.—Located as follows: No. 2 on B. & O. main line, No. 1 on B. & O. branch, near Dawson, Pa. These mines are connected and are worked through drift openings and single-entry system, with fan ventilation at No. 1. These mines are owned by the H. C. Frick Coke Company, which I think will find it to its advantage to adopt the double-entry system and replace the furnace at No. 1 with a fan. The condition of these mines is all that can be expected under the single-entry system.

Stewart mine.—Located on the B. & O. R. R., near Evans' station, Pa. Owners, Stewart Iron Company. Slope opening, double-entry system, with fan ventilation. This mine is in very good condition and it would be a difficult matter to find room for improvement in it.

Statler and Standard mines.—Located on the Baltimore and Ohio R. R. Grassy Run branch, Grassy Run, Somerset county, Pa. Owners, E. Statler & Co. Drift openings, very poorly ventilated.

Snider mine.—Located near Uniontown, Pa. Owners, Snider heirs. Mine poorly ventilated.

Tip Top mine.—Located on Mt. Pleasant branch, B. & O. R. R., Owensdale, Pa. Owner, H. C. Frick Coke Company. Drift opening, double entries and fan ventilation Workings rather wet, but otherwise in good condition.

Tyrone mine.—Located on the B. & O. R. R., near Broadford, Pa. Owners, Laughlin & Co. Drift opening, double entries and steam boiler ventilation. Mine in good condition, but ventilation rather irregular.

Tub Mill Run mine.—Located on Salisbury branch, B. & O. R. R., West Salisbury, Somerset county, Pa. Drift opening, single entries and natural ventilation. Mine in fair condition.

Thomas mine.—Located near Myersdale, Pa., on Salisbury branch, B. & O. R. R. Owner, Benj. Thomas. Drift opening, single entries and natural ventilation. Condition fair.

Trotter mine.—Located on the P. S. W. R. R., near Connellsville, Pa.

Shaft openings, double entries and fan ventilation. Mine in good condition in every respect. Owner, H. C. Frick Coke Company.

Union mine.—Located on P. V. & C. R. R. branch, at Tippecanoe station, Pa. Owners, J. D. Boyd & Co. Drift opening, double entries and furnace ventilation. Mine in very fair condition.

Uniondale mine.—Located on P. S. W. R. R., near Dunbar, Pa. Owners, J. M. Reid & Co. Slope opening and fan ventilation. The old workings of this mine, were until recently, magazines for millions of cubic feet of fire-damp, this however, has now been completely drained off, and a great element of danger removed. I made more than thirty visits to this mine during the past year and stayed there several days at a time, until I saw the fire-damp all removed.

Ursina mine.—Located on a branch railroad, owned by the coal company connecting with the B. & O. R. R., at Ursina, Pa. Owners, Ursina Coal and Coke Company. Drift opening, natural ventilation and single entries. This mine has improved greatly and there is every indication now that a fine field of coal has been tapped. The seam is seven feet in thickness and remarkably pure.

Valley mine.—Located at Valley station, Pa., on the P. S. W. R. R. Owner, H. C. Frick Coke Company. Drift opening, double entries and fan ventilation. I always found this mine in good condition.

Wheeler mine.—Located on the P. S. W. R. R., Wheeler, Pa. Owner, Cambria Iron Company. Slope opening, double entries and fan ventilation. Workings in fair condition.

White mine.—Located on Mt. Pleasant branch, B. & O. R. R., near Summit station, Pa. Drift opening, double entries and fan ventilation. Mine in fair condition. Owner, H. C. Frick Coke Company.

Wynn mine.—Located on P. S. W. R. R., near Oliphant Furnace, Pa. Owner, H. C. Frick Coke Company. Slope opening, double entries and fan ventilation. Condition has been only fair, but it is improving fast.

Youngstown mine.—Located on P. S. W. R. R., at Stambaugh station, Pa. Slope opening, double entries and fan ventilation. Condition of mine very fair. Numerous improvements are being made here. Owner, H. C. Frick Coke Company.

Larry, Track and Tipple. H. C. Frick Coke Co.'s Summit Mines.

Pit Mouth No. 1. H. C. Frick Co.'s Summit Mines.

Office of the Inspector of Bituminous Mines,
Fifth District of Pennsylvania,
Uniontown, Fayette, Co., Pa., *March 7, 1891.*

Hon. Thomas J. Stewart, *Secretary of Internal Affairs:*

Sir: I have the honor of herewith presenting to you my first annual report as Inspector of the coal mines of the Fifth Bituminous district of Pennsylvania.

My report is necessarily brief as I have only been in office two months, and so have not visited all of the mines in the district. But in the majority of the mines which I have visited there is evidence of a desire to comply with the requirements of the law, especially in regard to ventilation, the importance of this matter having been impressed upon all by the late Hill Farm mine disaster.

It will be observed by the descriptive part of this report (which my predecessor, Mr. F. C. Keighley, has kindly written), that quite a number of fans have been erected at various mines during the year; these are the only efficient appliances for ventilation in this district.

The following is a summary of this report:

Number of mines in the district,	88
Number of tons of coal mined,	6,471,083
Number of tons of coke produced,	3,958,494
Number of tons of coal shipped,	568,196
Number of persons employed inside,	5,826
Number of persons employed outside,	3,890
Total number of persons employed,	9,716
Number of coke ovens reported,	9,862
Number of fatal accidents,	50
Number of non-fatal accidents,	37
Number of wives made widows by above fatalities,	27
Number of orphans from same cause,	81
Number of tons of coal produced per life lost,	129,421
Number of persons employed per life lost,	194
Number of persons employed per non-fatal injury,	262
Number of horses and mules employed,	609

Accompanying this report are photographic views of Hill Farm mine, in which is entombed the thirty-one unfortunate miners; also sketch of Mahoning mine through which the rescuing party tried to reach Hill farm mine; also view of Redstone shaft, which has the only complete steel head-gear in this region; and view of Summit mine and tipple.

All of which is respectfully submitted.

Yours truly,

WILLIAM DUNCAN,
Inspector of Mines.

TABLE I *Showing Location of Collieries in the Fifth Bituminous Mine District.*

NAME OF COLLIERY	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Adelaide	H. C. Frick Coke Company	Fayette	R. O. Thomas	Broad Ford.
Atlas	Cambria Iron Company	"	John Dilworth	Dunbar.
Anchor	Penn Manufacturing Mining and Supply Company	"	Chas. A. Lanig	"
Berlin	B. D. Morgan & Co.	Somerset	C. J. Baker	Berlin.
Buffalo	Buffalo Coal and Coke Company	"	W. F. Childs	Garrett.
B. & O.	W. P. Stillwagon	Fayette	W. P. Stillwagon	Connellsville.
Banning	Morgan, Moore and Balne Co.	"	I. Baysinger	Carrollton, Ohio.
C. and E. L.	Cumberland and Elk Lick Coal Company	"	A. Chamberlin	Myersdale.
Clinton	H. C. Frick Coke Company	"	Thos. Lynch	Scottdale.
Coal Brook	McClure Coke Company	"	F. Pickard	Moyers.
Clarissa	James Cochran, Sons & Co.	"	P. G. Cochran	Vanderbilt.
Cora	J. Newmyer & Sons	Somerset	J. S. Newmyer	Dawson.
Casselman	Casselman Coal Co.	"	Wm. G. Hocking	Myersdale.
Cooperative				
Davidson	H. C. Frick Coke Company	Fayette	John S. Munson	Connellsville.
Diamond	McClure Coke Company	"	J. P. Brennan	Scottdale.
Dexter	J. R. Stauffer	"	S. R. Fairchild	"
Fountain	E. A. Humphrey	"	E. A. Humphrey	"
Franklin	B. F. Keister & Co.	"	B. F. Keister	Owensdale.
Fort Hill	W. J. Rainey	"	T. J. Mitchell	Connellsville.
Fairchance	Fairchance Furnace Company	"	Robert L. Martin	Fairchance.
Ferguson	Dunbar Furnace Company	"	Frank A. Hill	Dunbar.
Fair View	Fair View Coal Company	Somerset	Thomas Rees	Myersdale.
Flog Hill	" "	"	" "	"
Gassman	Cumberland and Summit Coal Company	"	Geo. W. Gassman	"
Grace	W. J. Rainey	Fayette	Thomas W. Johns	Moyers.
Great Bluff	E. A. Humphrey	"	E. A. Humphrey	Scottdale.
Grassy Run	Grassy Run Coal Company	Somerset	John Meager	Elk Lick P. O.
Henry Clay	H. C. Frick Coke Company	Fayette	W. C. Mullan	Broad Ford.
Hill Farm	Dunbar Furnace Company	"	Frank A. Hill	Dunbar.
Home	Stauffer & Wiley	"	J. W. Wiley	Scottdale.
Hamilton	Hamilton & Cochran	Somerset	James Cochran	Elk Lick P. O.
Hocking	John Hocking, Jr.	"	John Hocking, Jr.	Myersdale.
Junction	Joseph Laughrey	Fayette	P. G. Cochran	Vanderbilt P. O.
Jackson	James Cochran & Sons	"	John I. Cochran	Dawson.
Kyle	H. C. Frick Coke Company	"	T. K. McDonalds	Fairchance.
Keystone	Keystone Coal Company	Somerset	E. J. Del	Myersdale.
Leith	H. C. Frick Coke Company	Fayette	Harry Whyel	Uniondale.
Lemont No. 1	McClure Coke Company	"	P. J. Brennan	Scottdale.
Lemont No. 2	" "	"	" "	"
Leisenring No. 1	H. C. Frick Coke Company	"	J. A. Esser	Leisenring.
Leisenring No. 2	" "	"	R. A. Statler	West Leisenring.
Leisenring No. 3	" "	"	Robert Gray	Leisenring.
Lynn	Hanna Brothers	"	John Porter	West Brownsville.
Morrell	Isaac Taylor	"	Andrew L. Nelson	Connellsville.
Mahoning	"	"	John Dilworth	Dunbar.
Mt. Braddock	Robert Hogsett & Co.	"	Fuller Hogsett	Mt. Braddock
Morgan	H. C. Frick Coke Company	"	W. C. Mullan	Broad Ford.

Nellie,	Brown & Cochran,	"	P. G. Cochran,	Vanderbilt P. O.
Oliphant,	H. C. Frick Coke Company,	"	J. E. Springer,	Oliphant.
Painter,	McClure Coke Company,	"	P. J. Brennan,	Scottdale.
Pennsville,	Dillinger & Sherrick,	"	J. F. Dillinger,	Pennsville.
Percy,	Percy Mining Company,	"	Louis DeSaullis,	Uniontown.
Paul,	W. J. Rainey,	"	J. T. Mitchell,	Connellsville.
Plummer,	H. C. Frick Coke Company,	"	John I. Munson,	"
Pine Hill,	Pine Hill and Cumberland Coal Company,	Somerset,	Herman Flote,	Berlin.
Redstone,	H. C. Frick Coke Company,	Fayette,	S. E. Wardsworth,	Brownfield.
Redstone shaft,	Redstone Oil, Coal and Coke Company,	"	Andrew Nicholson,	Tippecanoe.
Rist,	H. C. Frick Coke Company,	"	J. F. Kick,	Broad Ford.
Rainbow,	Rainbow Coal and Coke Company,	"	D. P. Whittsett,	Whitsett.
Shaws Grassy Run,	Cumberland and Elk Lick Coal Company,	Somerset,	A. Chamberlain,	Myersdale.
Scottdale Iron and Steel Co.,	Scottdale Iron and Steel Company,	Fayette,	D. G. Anderson,	Scottdale.
Sterling No. 1,	J. M. Schoonmaker Coke Company,	"	Milson Rosser,	Dawson.
Sterling No. 2,	" " "	"	"	"
Stewart,	Stewart Iron Company,	"	F. C. Van Dusen,	Uniontown.
Statler,	E. Statler,	Somerset,	E. Statler,	Elk Lick P. O.
Snider,	Edward Snider,	Fayette,	Edward Snider,	Uniontown.
Summit,	H. C. Frick Coke Company,	"	C. J. Warnock,	Owensdale.
Smocks,	J. D. Boyd & Co.,	"	J. D. Boyd,	Uniontown.
Tip Top,	H. C. Frick Coke Company,	"	Thomas Lynch,	Scottdale.
Tyrone,	Laughlin & Co. (Limited),	"	Clifton Wharton,	Broad Ford.
Tub Mill Run,	Fair View Coal Company,	Somerset,	Thomas Rees,	Myersdale.
Thomas,	Benj. Thomas,	"	Benjamin Thomas,	"
Trotter,	H. C. Frick Coke Company,	Fayette,	John Sneddon,	Connellsville.
Uniondale,	Reid Brothers,	"	J. M. Reid,	Dunbar.
Ursina,	Ursina Coal and Coke Company,	Somerset,	Henry Reid,	Ursina.
Valley,	H. C. Frick Coke Company,	Fayette,	Thomas Lynch,	Scottdale.
Wheeler,	Isaac Taylor,	"	Andrew L. Nelson,	Connellsville.
White,	H. C. Frick Coke Company,	"	W. C. Mullan,	Broad Ford.
Wynn,	" " "	"	Thomas Lynch,	Scottdale.
Youngstown,	Youngstown Coke Company (Limited),	"	Capt. Schoonmaker,	Uniontown.

* Coal goes to Valley mine.

TABLE No. II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of kegs of powder used, etc., in the Fifth Bituminous Mining District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Adelaide	Fayette	278,602	178,342		279	324		1		3	24	1	342
Atlas	"	56,913	35,694		221	74	1			4	3		80
Anchor	"	52,078	37,170		244	86			1	5	4		100
Berlin	Somerset	8,800		7,800		17			40		2		
Buffalo	"	9,409		8,558	88	69		2		2	3		28
B. & O.*	Fayette				365	22							
Banning	"	53,307		53,307	165	78				1	6		
C. & E. L.	"	70,333	14,275	62,653	233	106					7		75
Clinton†	"												
Coal Brook	"	45,339	30,000		284	55			10	1	3		70
Clarissa	"	69,480	49,848		250	80					5		108
Cora	Somerset	28,475	20,270		281	35			30	1	2		42
Casselman	"	68,000		68,000	92	3		3	500	1			
Cumberland	"	21,600		21,600	240	28			175		2		
Davidson	Fayette	143,706	142,693		271	204		3		8	10	1	331
Diamond	"	41,000	27,000		280	47					3		66
Dexter	"	23,750	17,572		265	45	1			1	5		40
Fountain‡	"												87
Franklin	"	43,550	22,785		271	37			200		3		50
Fort Hill	"	130,000	96,600		290	108		4		1	16		186
Fairchance	"	75,577	47,921		295	140			236		7		126
Ferguson	"	50,259	27,895		264	65				5	4		70
Fairview	Somerset	56,436		56,436	232	74		1	688		6		
Flog Hill													
Gassman	Somerset												
Grace	Fayette	262,500	196,700		294	311	2	1		6	26		410
Great Bluff	"	15,000	9,700		260	20				1	3		16
Grassy Run	Somerset	10,600		10,600	142	28					2		

Henry Clay	Fayette	93,704	63,882		265	124			300	4	10		120
Hill Farm	"	48,991	29,545		141	125	34	2		7	5		150
Home	"	14,700	11,500		278	16				1	2		20
Hamilton	Somerset												
Hocking	"												
Junction	Fayette	77,314		77,314	230	68					5		
Jackson	"	24,000	16,800		240	38				1	4		64
Kyle	"	105,650	63,200		264	155	1			2	10		164
Keystone	"	15,000			240	23					3		
Leith	"	219,644	140,249		267	310				9	27		284
Lemont No. 1	"	97,000	65,000		276	224	1				14		216
Lemont No. 2	"	9,300	4,233	3,000	59	205	1	1		4	13		200
Leisenring No. 1	"	200,810	130,352		157	492	3	1		12	28		500
Leisenring No. 2	"	255,976	160,928		218	475	2	5		10	26		500
Leisenring No. 3	"	288,358	150,344		269	410		5		9	15	2	504
Lynn	"	8,028		8,028		27			50		3		
Morrell	"	298,433	205,614		288	393	1	6	550		20		400
Mahoning	"	5,918	1,284		15	69				4	3		100
Mt. Braddock	"	85,000	54,300		300	119				6	8		130
Morgan	"	25,908			276	16					2		
Nellie	"	227,852	140,235	27,570	275	272		1		2	13		329
Oliphant	"	86,102	55 078		256	126				4	6		130
Painter	"	164,388	109,000		280	213		1	400	1	11	1	228
Pennsville	"	60,200	52,400		280	70	1			1	5		92
Percy	"	45,164	23,304	6,216	268	68				2	3		62
Paul	"	110,500	83,450		290	206		1		2	8		214
Plummer	"	57,775	§		149	76		1		2	6		*
Pine Hill	Somerset												
Redstone	Fayette	298,915	216,669		271	488	1			10	29		446
Rist	"	207,570	159,315		265	282		1	750	2	20	1	367
Redstone shaft	"	4,000	5,250	4,000	216	93				3	4		21
Rainbow	"	15,918		22,803	225	56			160	1	4		
Shaw's Grassy Run	Somerset	25,293		25,293	253	27					2		
Scottdale Iron and Steel Company	Fayette	6,234			58	36					3		
Sterling No. 1	"	180,254	139,998	124	280	323				2	15		294
Sterling No. 2	"	70,092	55,223		280	103				2	15		100
Stewart	"	92,925	64,049		296	117				5	5		120
Statler	Somerset												
Snider	Fayette	4,081			117	15					2		
Summit	"	145,457	100,038		273	191			30		11		222
Smocks	"	46,380		46,380	258	54		1	290		4		
Tiptop	"	80,795	50,018		262	95	1	1	100	2	6		121
Tyrone	"	112,778	66,603	6,363	305	93			360	2	4		144
Tub Mill Run	Somerset	34,981		34,981	215	47		2	391		3		
Thomas	"	11,960		11,960	293	16					1		
Trotter	Fayette	279,048	190,451		242	427	1	2	5	8	20		464
Uniondale	"	39,347	26,419	210	255	72				2	3		74
Ursina	Somerset												
Valley	Fayette	197,155	120,189		264	237		2	200	4	14	1	251
Wheeler	"	76,342	51,349		287	93			1	4	4		100
White	"	124,580	80,392		273	171				1	12		200
Wynn	"	52,649	33,367		254	81			165	2	4		70
Youngstown	"	125,000	84,000		230	283	1		80	8	28		240
Total		6,471,083	3,958,494	553,196	16,747	9,855	52	48	5,712	181	609	7	9,862

* Production consumed by B. & O. R. R. † Abandoned. ‡ On fire. § See Davidson. ‖ Consumed by rolling mill. * Shaft.

TABLE No. III.—*Showing the number of each class of employes at each colliery in the Fifth Bituminous Mine District, during the year 1890.*

NAMES OF COLLIERIES	Location—County	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside
		Inside foreman or mine boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Doorboys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Cokers and yardmen.	All company men.	Superintendent, book-keepers and clerks.	Total outside.	
Adelaide	Fayette	1	154	4	18	24	6	207	1	3	3	102	22	2	135	342
Anchor	"	1	32	. .	3	4	1	41	1	1	3	33	2	2	45	86
Atlas	"	1	32	6	4	3	. .	46	1	2	3	20	2	2	30	76
Berlin	Somerset	1	10	. .	2	2	. .	15	1	. .	. .	. .	. .	—	2	17
Buffalo	"	1	50	2	1	3	1	58	1	. .	2	6	2	. .	11	69
B. & O.	Fayette	1	16	. .	2	2	. .	21	1	. .	. .	. .	. .	. .	1	22
Banning	"	1	55	. .	5	6	2	69	. .	1	1	. .	5	2	9	78
C. & E. L.	"	1	62	6	4	7	2	82	1	1	. .	16	4	2	24	106
Clinton	"	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Coal Brook	"	1	24	. .	2	3	. .	30	1	1	. .	18	4	1	25	55
Clarissa	"	1	40	2	7	5	. .	55	1	1	. .	20	2	1	25	80
Cora	Somerset	1	14	2	2	2	. .	19	1	1	. .	12	1	1	16	35
Casselman	"	1	70	5	6	4	. .	86	1	1	2	. .	5	1	10	96
Cumberland	"	1	24	. .	1	3	. .	28	. .	. .	. .	. .	. .	1	1	29
Davidson	Fayette	1	70	6	10	10	6	103	1	10	9	65	14	2	101	204
Diamond	"	1	18	. .	1	2	. .	23	1	. .	. .	20	2	1	24	47
Dexter	"	1	10	2	3	3	. .	19	1	. .	. .	24	1	. .	26	45
Fountain	"	1	. .	. .	. .	. .	1	. .	. .	. .	. .	. .	. .	. .	. .	. .
Franklin	"	1	15	. .	1	3	. .	20	1	1	. .	13	1	1	17	37
Fort Hill	"	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Fairchance	"	1	58	. .	8	7	. .	74	1	1	1	60	2	1	66	140
Ferguson	"	1	25	. .	5	4	2	37	. .	. .	4	22	2	. .	28	65
Fairview	"	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Flog Hill	Somerset	1	47	7	3	6	. .	64	1	1	. .	. .	6	2	10	74
Gassman	Somerset	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
Grace	Fayette	1	143	3	15	17	4	183	1	4	5	80	21	7	118	301
Great Bluff	"	1	9	1	1	3	. .	15	. .	. .	. .	4	. .	1	5	20
Grassy Run	Somerset	1	23	1	1	2	. .	27	. .	. .	. .	. .	. .	1	1	28
Henry Clay	Fayette	1	42	5	3	10	. .	55	1	1	3	51	2	1	59	124
Hill Farm	"	1	56	4	8	5	3	77	1	4	4	35	3	1	48	125

Home	Fayette	1	8	. . .	1	1	. . .	11	. . .	. . .	. . .	4	. . .	1	5	16
Hamilton	Somerset	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Hocking	"	1	27	2	3	2	. . .	35	. . .	. . .	. . .	. . .	. . .	. . .	. . .	35
Junction	Fayette	1	55	. . .	5	5	1	67	1	. . .	. . .	. . .	. . .	1	2	69
Jackson	"	1	18	. . .	2	4	. . .	25	1	1	. . .	10	1	1	14	39
Kyle	"	1	67	. . .	6	10	1	85	1	3	3	45	17	1	70	155
Keystone	Somerset	1	10	. . .	2	3	. . .	16	. . .	. . .	2	. . .	4	1	7	23
Leith	Fayette	1	125	. . .	20	27	8	181	1	5	10	95	17	1	129	310
Lemont No. 1	"	1	86	2	14	14	5	122	1	6	9	70	14	2	102	224
Lemont No. 2	"	1	90	1	10	13	2	117	1	7	5	60	14	1	88	205
Leisenring No. 1	"	1	239	. . .	31	28	14	313	1	7	7	140	20	4	179	492
Leisenring No. 2	"	1	232	. . .	39	26	13	311	1	13	9	118	19	4	164	475
Leisenring No. 3	"	1	190	4	20	15	4	234	1	5	7	139	21	3	176	410
Lynn	"	1	16	1	3	3	. . .	24	1	1	. . .	. . .	. . .	1	3	27
Morrell	"	1	150	12	40	20	2	225	1	4	5	135	21	2	168	393
Mahoning	"	1	16	11	8	3	. . .	39	. . .	2	3	25	. . .	. . .	30	69
Mt. Braddock	"	1	45	3	5	8	2	64	1	2	3	40	6	3	55	119
Morgan	"	1	10	. . .	3	2	. . .	16	§	. . .	. . .	. . .	. . .	. . .	. . .	16
Nellie	"	1	110	6	8	13	3	141	1	3	3	100	30	1	138	279
Oliphant	"	1	55	1	4	6	3	70	1	2	3	40	9	1	56	126
Painter	"	1	74	3	7	11	3	99	1	3	2	100	6	3	115	214
Pennsville	"	1	30	1	3	8	. . .	43	1	1	1	18	2	4	27	70
Percy	"	1	26	. . .	4	3	3	37	1	1	3	20	4	2	31	68
Paul	"	1	110	3	9	9	4	136	1	1	3	60	3	2	70	206
Plummer	"	1	48	3	5	6	3	66	1	. . .	2	‡	3	4	10	76
Pine Hill	Somerset	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Redstone	Fayette	2	191	. . .	31	29	18	271	1	9	13	150	35	10	218	488
Redstone Shaft	"	1	25	. . .	30	4	. . .	60	1	1	3	7	19	2	33	93
Rist	"	1	90	10	8	20	1	130	1	3	3	137	6	2	152	282
Rainbow	"	1	37	4	2	4	. . .	48	1	1	1	. . .	3	2	8	56
Shaw's Grassy Run	Somerset	1	22	1	1	2	. . .	27	. . .	. . .	. . .	. . .	. . .	. . .	. . .	27
Scottdale Iron and Steel Company	Fayette	1	21	2	4	3	. . .	31	1	1	. . .	. . .	2	1	5	36
Sterling No. 1	"	1	89	8	7	15	3	123	1	3	2	87	4	3	100	323
Sterling No. 2	"	1	33	2	2	5	. . .	43	1	14	2	24	16	3	60	103
Stewart	"	1	53	1	4	5	. . .	64	1	2	5	41	2	2	53	117
Statler	Somerset	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Snider	Fayette	1	9	1	1	2	. . .	14	. . .	. . .	. . .	. . .	. . .	1	1	15
Summit	"	1	70	10	5	11	. . .	96	1	2	. . .	85	4	2	94	191
Smock	"	1	37	. . .	3	4	. . .	45	1	. . .	. . .	. . .	3	3	7	52
Tip Top	"	1	43	1	3	6	1	55	1	1	1	32	3	2	40	95
Tyrone	"	1	38	3	4	4	2	52	1	2	3	32	2	1	41	93
Tubmill Run	Somerset	1	30	4	2	3	. . .	40	1	1	. . .	. . .	3	2	7	47
Thomas	"	1	13	. . .	. . .	1	. . .	15	. . .	. . .	. . .	. . .	1	. . .	1	16
Trotter	Fayette	1	180	6	26	20	10	243	1	6	6	161	6	4	184	427
Uniondale	"	1	30	3	3	3	2	42	. . .	1	2	25	1	1	30	72
Ursina	Somerset	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .	. . .
Valley	Fayette	1	105	. . .	6	14	5	131	1	2	2	85	14	2	106	237
Wheeler	"	1	36	2	6	4	1	50	1	2	4	32	2	2	43	93
White	"	1	67	. . .	8	12	. . .	88	1	1	1	61	17	2	83	171
Wynn	"	1	38	. . .	2	4	1	46	1	1	1	30	1	1	35	81
Youngstown	"	1	94	2	46	13	14	170	1	4	8	90	7	3	113	283
Total		73	4,286	169	574	567	157	5,829	58	158	181	2,899	466	128	3,890	9,716

* In with Valley. † On fire ‡ Idle all year. § In with Rist. ‖ In with Davidson. ¶ Claims less than ten men.

TABLE IV—*List of Fatal Accidents occurring in the mines of the Fifth Bituminous District for the year ending December 31, 1890.*

Date of accident	Name of Person	Occupation.	Age.	Widow.	Number of orphans.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 30.	Christopher Bell,	Timberman,	18	..	..	Leisenring No. 1.	Fayette.	Crushed by falling timbers; he died in about thirty minutes after being extricated.
30.	M. McColic,	Miner,	..	1	2	Redstone,	"	Killed instantly by loaded trip while he was walking up the slope.
Feb. 17.	Michael Hughes,	"	46	1	5	Hill Farm,	"	Killed by fall of slate while in the act of putting up a post.
7.	John Sopns,	"	44	1	..	Grace Mines,	"	Both of these men were burned, by the shot they were firing communicating with a quantity of powder, which they had in their working place; they both died a few days later.
7.	John Doseck,	"	29	1	..	"	"	
22.	Thomas Commisky,	"	50	..	..	Trotter,	"	Injured by fall of slate and died in about one hour.
26.	James C. Warren,	Water hauler.	21	..	..	Tip Top,	"	Found dead under the water wagon; was probably kicked by the mule.
April 7.	Stephen Myrphy,	Tippleman,	21	..	..	Pennsville,	"	Knocked off of the tipple by wagon and in falling came in contact with some timber; died from his injuries April 15, 1890.
Feb. 13.	Jesse Markley,	Laborer,	30	..	..	Morrell,	"	Killed by fall of a smokestack.
May 2.	George Pope,	Trapper,	14	..	..	Redstone,	"	Killed by empty trip; caused by a misplaced switch.
18.	Benjamin F. Goe,	Driver,	23	..	..	Willie shaft,	"	Crushed and leg broken by being caught and dragged along with the trip; died while his leg was being amputated.
Aug. 5.	John Bullock,	Miner,	35	1	..	Leisenring No. 1,	"	Killed by falling down the shaft.
23.	Edward D. Boyer,	"	47	1	3	Leith,	"	Ribs broken and crushed through the lungs by fall of roof while he was drawing posts in rib No. 7, fifteenth butt heading; died in about four hours after the accident.
Sept. 24.	Hugh Gilingham,	"	34	..	..	West Leisenring,	"	Killed by a fall of roof while drawing posts.
July 17.	Albert Rogers,	Driver,	18	..	..	Kyle Mine,	"	Killed by a mule running away with him.
June 22.	John Kane,	Pumper,	41	1	5	Atlas,	"	Found dead on slope; coroner's verdict, death from paralysis.
16.	Daniel McCashion,	Miner,	33	..	..	Hill Farm,	"	Death by mine fire and the body not yet recovered.
16.	Robert McQuill,	"	29	..	..	"	"	" " "
16.	Richard Bigley,	"	26	..	..	"	"	" " "
16.	Elmer Dewey,	"	24	..	..	"	"	" " "
16.	Daniel Shearen,	Fire-boss,	44	..	..	"	"	Death by mine fire; body found on traveling way.
16.	James Shearen,	Miner,	47	..	..	"	"	Death by mine fire and the body not yet recovered.
16.	John Devany,	"	30	1	3	"	"	" " "
16.	Patrick Devlin,	"	36	1	3	"	"	" " "
16.	John A. Joy,	"	26	1	1	"	"	" " "
16.	Martin Cavanaugh,	"	33	..	..	"	"	" " "
16.	James McCune,	"	32	1	1	"	"	" " "
16.	John Cope (father),	"	51	1	7	"	"	" " "
16.	Andrew Cope (son),	"	17	..	..	"	"	" " "
16.	Peter Eagan,	"	26	1	5	"	"	" " "

	16.	Patrick Cahill,	"	52	1	6	"	"	"	"
	16.	William Cahill,	"	47	.	.	"	"	"	"
	16.	David Davis (father),	"	45	1	6	"	"	"	"
	16.	Thomas Davis (son),	"	12	.	.	"	"	"	"
	16.	Jos. Bigley,	"	30	1	2	"	"	"	"
	16.	Thomas McCleary,	"	27	1	2	"	"	"	"
	16.	David Hayes (father),	"	48	1	4	"	"	"	Death by mine fire; body found on traveling way.
	16.	Wm. Hayes (son),	"	21	.	.	"	"	"	This boy's lamp fired the gas; body not yet recovered.
	16.	Patrick Courtney (father),	"	40	1	10	"	"	"	Death by mine fire and the body not yet recovered.
	16.	John Courtney (son),	"	17	.	.	"	"	"	"
	16.	Chas. P. Wanst,	"	29	1	.	"	"	"	"
	16.	Daniel Smith,	"	36	1	4	"	"	"	"
	16.	John P. Mitchell,	"	35	1	6	"	"	"	"
	16.	Milton Turney,	"	26	1	2	"	"	"	"
	16.	James McCleary,	"	49	1	3	"	"	"	"
	16.	John Kernan,	"	28	1	.	"	"	"	"
	16.	John Devanney,	"	13	.	.	"	"	"	"
Nov.	18.	Joseph Chirow,	"	40	1	1	West Leisenring,	"	Neck broken by being struck by the empty trip, he being in the dark; his lamp having gone out sometime previous.	
Dec.	16.	John A. Deck,	Driver,	19	.	.	Youngstown,	"	Ribs broken, penetrating the lungs, caused by the wagon jumping from the track and knocking out the post that was supporting the timber overhead, thereby causing it to fall upon him with the above result. He extricated himself from the fall and spoke, but only lived a few minutes.	
	23.	Thos. Goswick,	Miner,	19	1	.	Dexter,	"	Killed instantly by a fall of roof. His brother was standing close by watching the roof as he was digging out a stump of coal which was twelve feet back of his break-row. They had drawn most of their former break-row, and then attempted to dig out the stump of coal, which proved to be a trap.	

TABLE V.—*List of Non Fatal Accidents occurring in and about the mines of the Fifth Bituminous Mine District for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON.	Occupation.	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 18.	Joseph Strouw.	Miner.	41	M.	Fort Hill.	Fayette.	Both legs broken by a fall of roof coal.
20.	John S. Crosby.	"	41	M.	Fairview.	Somerset.	Head, neck and chest injured by fall of roof coal.
31.	George Rankin.	Driver.	23	M.	Leith.	Fayette.	Collar-bone broken by being caught between wagon and rib.
Feb 11.	Frank Popopisk.	Miner.	24	S.	Leisenring No. 3.	"	Both collar-bones broken by being caught between wagon and rib.
18.	Charles R. Bittner.	"	50	M.	C. & E. L.	Somerset.	Collar-bone broken by fall of breast coal
19.	Ben. Colbert.	"	28	M.	Casselman.	"	Leg injured by a fall of coal.
22.	Mich. Barthen.	"	30	M	Plummer.	Fayette.	Foot badly sprained by wagon jumping from the track.
23.	Wm. Aukenrit.	Rockman.	54	M.	Rist.	"	Lost his hand by explosion of dynamite.
24.	Robert Bird.	Door-boy.	14	S.	Paul mine.	"	Leg broken by wagon.
27.	John Smith.	Miner.	25	M.	Fort Hill.	"	Knee injured by fall of roof.
Mar 3.	Peter Ringler.	"	53	M.	Hocking.	Somerset.	Leg and ankle sprained by fall of breast coal.
25.	Wash. Hudock.	"	35	M.	Leisenring No. 3.	Fayette.	Foot broken by fall of coal.
26.	Wm. Tewellum.	Engineer.	25	M.	Grace mine.	"	Foot injured by being caught between slide of valve-rod and stuffing-box.
27.	Neil Sweeney.	Miner.	28	S.	Tip Top.	"	Burned by a blown-out shot.
April 9.	John Kokora.	"	44	S.	Lemont No. 1.	"	Injured by a fall of slate.
3.	Bruce Snyder.	"	21	S.	Fairview.	Somerset.	Hip and side injured by a fall of roof.
17.	Dawson Kirby.	"	30	M.	Stewart Iron Co.	Fayette.	Collar-bone broken and head injured by a fall of roof coal while drawing posts on a rib.
23.	John Perhotch.	Cager.	22	S.	West Leisenring.	"	Collar-bone broken by being caught between wagons.
28.	George Caldwell.	Driver.	35	M.	Davidson shaft.	"	Squeezed between two cars; caused by not putting the brake down.
June 3.	Andy Lucy.	"	23	M.	West Leisenring.	"	Hand crushed by being caught between the wagons and brake.
6.	Luke Shaw.	"	22	S.	Leith.	"	Face and head bruised and cut; caused by striking head against the roof, thereby knocking his face down upon the irons of the wagon.
9.	August Presuhn.	Miner.	35	M.	C. & E. L.	Somerset.	Arm broken in two places by fall of breast coal.
14.	Frank Tasesko.	"	35	M.	Leith.	Fayette.	Both legs broken by fall of coal and slate.
16.	John Outko.	"	. .	.	Fort Hill.	"	Back injured by a fall of roof while drawing posts on rib.
July 1.	Joseph Tucken.	"	17	S.	Casselman.	Somerset.	Left arm broken; caused by falling off of loaded trip on which he was riding.
10.	David Enos.	"	54	M.	Tub Mill Run.	"	Leg broken by fall of wild coal; the true cause of the accident was carelessness, as Enos knew that the coal was loose. His son was also slightly injured by the same fall.
15.	Fred. Upperman.	"	31	M.	Davidson shaft.	Fayette.	Slightly injured by a fall of top coal.
17.	Dominic Wapole.	"	41	M.	"	"	Crushed between wagon and post.
24.	Wills Kendal.	"	29	M.	Tub Mill Run.	Somerset.	Leg broken in three places and hip dislocated; caused by a fall of wild coal.
Aug. 5.	Thon as Hughes.	Driver.	29	M.	Leisenring.	Fayette.	Severe scalp wound, also back and side injured by falling from his trip and being dragged between wagon and rib.

22.	Joseph Shaloskey.	Miner.	29	M.	Union.	"	. . . . .	Leg broken by fall of slate, which could have been prevented by setting a post at the proper time.
Sept. 9.	Mike Buchock.	"	35	M.	Fort Hill.	"	. . . . .	Back injured by a fall of roof while drawing posts on rib.
Oct. 17.	Frank Thompson.	Trapper.	14	S.	Leith.	"	. . . . .	Fracture of the skull over the left temple by a loaded wagon rapidly descending the fourth butt and coming in contact with an empty trip on which he was riding.
29.	Thomas Eckart.	Roadman.	47	M.	Flog Hill.	Somerset.	. . . .	Leg broken by a fall of top coal while drawing posts in a worked out room.
Nov. 8.	John Brass.	Miner.	45	M.	Plummer.	Fayette.	. . . .	Shoulder and breast bruised by a fall of roof coal.
20.	Joseph Cafferty.	Rope-rider.	18	S.	Lemont No. 2.	"	. . . .	Leg broken by an empty wagon breaking loose and running back.
Dec. 4.	Harry Adams.	Miner.	40	S.	Junction.	"	. . . .	Back sprained by slate falling between posts and face of rib.

SIXTH BITUMINOUS DISTRICT.

(BLAIR, CAMBRIA, CLEARFIELD, JEFFERSON AND WESTMORELAND COUNTIES).

OFFICE OF INSPECTOR OF MINES,
JOHNSTOWN, PA., *February 28, 1891.*

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor herewith of presenting my sixth annual report as Inspector of mines for the Sixth Bituminous coal district, for the year ending December 31, 1890.

The production of coal for the year was 5,790,714 tons, an increase of 1,515,685 tons over that of 1889. The district is increasing very rapidly. There were about 2,000 more persons employed during the month of December, 1890, than there was during the same month of December, 1889. The production of coke is 1,167,500 tons; an increase over 1889 of 260,000 tons.

The number of fatal accidents for the year was 15; non-fatal, 27; the causes of which, can be seen in Tables IV and V of this report. The accidents, fatal and non-fatal, show quite an increase over the number for 1889. However, there is a large increase in the production of coal.

I herewith submit a summary of the various accidents, as follows:

	Fatal.	Non-fatal.
By falls of rock,	8	10
By falls of coal,	5	4
Struck by cage,	1	2
By mine wagons,	1	10
Struck by hauling rope,		1
Total,	15	27

It will be observed in both the fatal and non-fatal accidents, that the prevailing cause is falls of roof, while in former years it was falls of coal that was causing the most accidents; the reason for the change in

the causes are, that during 1890 a rule was enforced throughout the mines of the district compelling all miners to put sprags under their coal, when undermining, at least at every five feet. This I think has done much towards decreasing the accidents by falls of coal. I also made very careful inquiry upon my examination of the causes of the fatal and non-fatal accidents, and learned that not less than four that were killed were not practical miners, and about seven who were injured were of the same class. Aside from this cause, I am compelled to state that the principal cause lies directly with the miner himself, in neglecting to prop his place and otherwise to protect himself, where material, etc., are at hand to enable him to do so. Although I have made the statement that the principal cause of accidents in our mines lies directly at the door of the miner, I wish to state also that, indirectly, the mine-boss contributes to this state of things, as it is his special duty to enforce discipline in his mine; when he tells a man to stand a prop, or put a sprag under his coal, or gives any other order that he thinks will prevent an accident, he should, at all hazards, see that his order is obeyed. I have no desire to find fault with the mine-boss, as I consider his lot a hard one already; but I will say that he can have much to do with decreasing the accident lists in our mines by exercising vigilance in the performance of his duties and enforcing a strict discipline in the mines.

As to the sanitary condition of our mines, I would just state that, in addition to what I have stated in the description of each mine in the district, that a considerable number of improvements have been made through the district in the haulage and drainage particularly; and some improvements in the ventilation, in the way of increasing the ventilating power, and that by replacing furnaces with fans, a change that is very much needed in the shallow mines such as we have in this region, has been made as the furnaces in some of them are worse than useless.

When we think of the dangers that lurk around the miner after he leaves his wife and little ones to go down into the dark and deep caverns of the coal mine, to be surrounded by noxious and deleterious gases, which so frequently cause such terrible catastrophes in our mines, we are forced to believe that more protection should be thrown about him. One of the methods of further protecting the miners would be to have better progress made in the ventilation of the mines, that is to say, in the distribution of the air.

What we want to accomplish is, that each section of work be ventilated entirely independent of the others, and without being dependent upon doors. My experience of late is, that the greatest trouble existing in the mines of this district is the neglect in not having well-built doors and in not having them kept closed. The very idea of having a door in a mine which may possibly regulate the air to keep a hundred men alive, to be left in charge of a boy, probably twelve to fourteen years of age, is not by any means a safe or reliable method of ventilating a mine.

I therefore claim that we must ventilate our mines by separate splits of air and without the aid of doors. The method is very simple and more economical than the door system, and would, I believe prevent many of the great mine calamities.

Another great preventive of accidents in our mines would be to have better discipline enforced in them. I can scarcely imagine where it is required to a greater extent than there where, possibly, each man in it holds the life of the rest in his hands But I am sorry to say that there is a great lack of it in our mines. I therefore hope that in the revision of our mining laws a proper code of rules, governing all employes, will be inserted in it, and penalties attached for the non-compliance with them, so as to bring our mines all down to a good system of discipline. This would be of incalculable benefit to both employer and employe.

Enclosed with my report will be found the drawing of a pair of engines just erected at Webster colliery No. 3, located at or near South Fork, Cambria county; also statistics showing the amount of coal in tons mined per fatal and non-fatal accident, etc.

Yours very respectfully,

J. T. EVANS,
Inspector.

Mine Statistics.

Coal production in tons,	5,790,714
Coke production in tons,	1,167,500
Coal shipped in tons,	3,733,566
Number of men employed at mines,	9,863
Number employed per fatal accident,	657
Number employed per non-fatal accident,	365
Number of tons mined per fatal accident,	386,047
Number of tons mined per non-fatal accident,	214,470

Number of mines in each county of which the district is composed with number of men employed, and tons of coal mined in each.

Blair county—Number of mines,	6
Number of men employed,	631
Tons of coal mined,	395,716
Cambria county—Number of mines,	43
Number of men employed,	4,218
Tons of coal mined,	2,457,573
Clearfield county—Number of mines,	7
Number of men employed,	585
Tons of coal mined,	200,358

Indiana county—Number of mines,	3
Number of men employed,	211
Tons of coal mined,	120, 789
Jefferson county—Number of mines,	10
Number of men employed.	2, 667
Tons of coal mined,	1, 509, 619
Westmoreland county—Number of mines,	10
Number of men employed,	1, 551
Tons of coal mined,	1, 106, 659

Blair County Mines—Bennington mine, Bennington slope, Lemon mine, Beech Grove mine.

The first named mine is about worked out; nothing of any consequence being worked but the robbing of pillars, and working of patches of coal left in the driving up of the work. The mine is ventilated by an eight-foot double Murphy fan, which gives reasonably good ventilation, considering the size of the seam of coal, which is 2 feet 4 inches. It being low, very small passages are provided to force the air through.

The Lemon mine is ventilated by a furnace. The system of ventilating in this mine is a model one, there being separate splits for each butt heading, and the air is distributed without the aid of a single door in the mine. Inasmuch as the coal does not have a great deal of covering, the upcast shaft is not very deep, consequently the power is not great, and the furnace is, therefore, not fully adequate to the work at present.

Beech Grove mine is ventilated by what they call a furnace, but being a shallow mine, it has little power, it therefore does not do the work as it should be done. I want those in charge here to put in a new air shaft.

There are three other mines in Blair county: one at Glen White, one at Kittanning Point, and the third at Tipton.

The Glen White mine is ventilated by a fan and is generally kept in pretty fair condition, considering the smallness of the seam and the quantity of water to contend with. The thickness of the coal bed is 2 feet 4 inches.

The Horse Shoe mine at Kittanning Point is worked on the same seam as the Glen White mine. It is provided with a small furnace with which to ventilate, and by no means gives as satisfactory results as the fan.

There are certain seasons of the year when furnaces prove an injury to the mine, and especially so when there is negligence shown in their care; and we find evidences of this too often. I am pleased to state that on my last visit to this mine it was in pretty good condition in point of ventilation, but defective as to drainage.

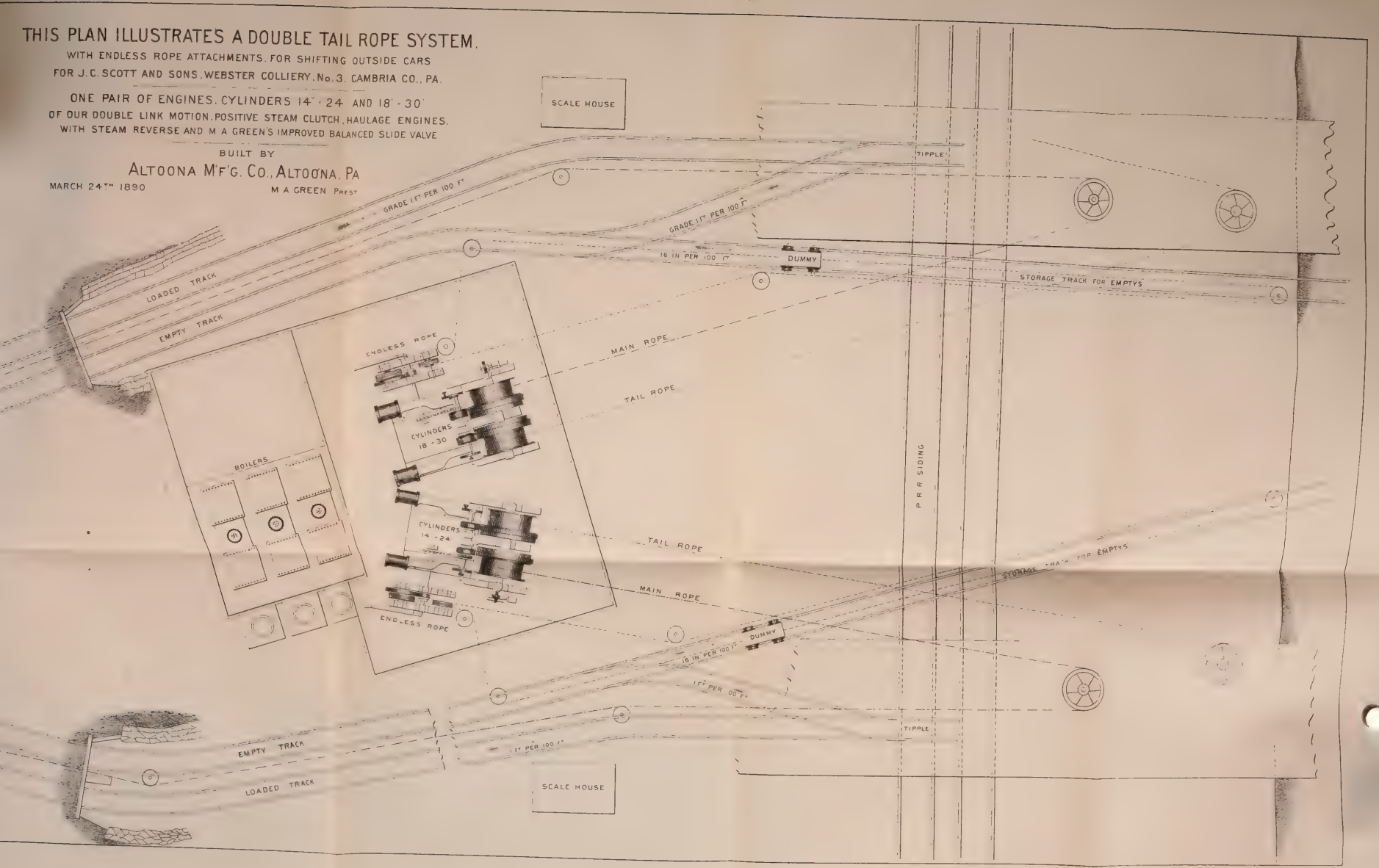
Tipton mine is a small operation in an isolated coal field a few miles off the main line of the P. R. R., and about four miles west of Tyrone.

THIS PLAN ILLUSTRATES A DOUBLE TAIL ROPE SYSTEM.

WITH ENDLESS ROPE ATTACHMENTS. FOR SHIFTING OUTSIDE CARS
FOR J. C. SCOTT AND SONS, WEBSTER COLLIERY, No. 3. CAMBRIA CO., PA.

ONE PAIR OF ENGINES. CYLINDERS 14" · 24 AND 18" · 30"
OF OUR DOUBLE LINK MOTION. POSITIVE STEAM CLUTCH, HAULAGE ENGINES.
WITH STEAM REVERSE AND M A GREEN'S IMPROVED BALANCED SLIDE VALVE

BUILT BY
ALTOONA M'F'G. CO., ALTOONA, PA
MARCH 24TH 1890 M A GREEN PREST



The coal is of an unusually good quality, and the thickness of the seam is about 3 feet. The mine now being operated is a slope going down on the pitch of the seam, which is pretty heavy. The hoisting engine being inside, the shaft above it into which smoke from boiler fires escape, is the only means for producing ventilation.

Cambria County Mines—Argyle mine, Aurora mine, Euclid, J. C. Steinman, South Fork, Webster No. 3.

All of these mines are located at South Fork on main line of P. R. R. To describe each, would be a repetition of words as all are worked on the same system double heading. All are ventilated by furnaces except the Webster No. 3, which is ventilated by two fans. Each mine is kept in good condition by those in charge of the workings, who keep their ventilating apparatus in good condition, look after the interests of their employer, and to the welfare of the employes; as a neglect of either is detrimental to the interest of the other, and it is strange how few foremen consider this point and study it correctly. The Webster mine has put in a new rope haulage; it has now two complete engines, each hauling from separate parts of the mine. I enclose a cut of the engine complete for insertion in this report.

Johnstown Mines.

There are at present three mines in operation in this place: The Rolling Mill mine, Hawes shaft and Cushion mine. The last named, up to the present time, has been worked by contractors leasing from the Cambria Iron Company, but is again in the hands of the said company. Under the contractors, I am sorry to say, the ventilation of the mine was rather feeble. I have no hesitation in saying that in the hands of the Cambria Iron Company, it will be put in the best condition in this respect, as the first thing on taking hold of it was to order the sinking of a new air shaft.

The Hawes mine is a small operation employing about twenty men, but in point of ventilation it is a model. Anything that will be for the comfort of the men will be provided or adopted by those operating it.

The Rolling Mill mine has been closed for several years, but is now open in consequence of the failure of natural gas. The company has put in new haulage here, providing a pair of engines of 400 horse power. The distance of haulage is about two miles, and the system used is the tail-rope. The machinery at its full capacity will haul from 1,500 to 2,000 tons daily, if it becomes necessary. It has power to draw sixty or seventy wagons per trip that hold about two tons each. The mine is ventilated by means of a fan; the system of mining is double heading. The work has just been opened up and is not yet in full operation.

Krings mine is a new operation opened up during the latter part of 1890. It is located on the Cambria branch of the Baltimore and Ohio

railroad, about three miles from Johnstown. The coal for the Johnson Street Steel Railroad Company, located at Moxham, is obtained here. When examined last, the condition of drainage and ventilation of this mine were good. The present mode of ventilation is by means of a furnace: it is proposed, however, to put in a new fan in the near future. The furnace is used as a temporary power until the mine is opened up well.

Portage Mines—The Ebervale, Martindale slope, Portage shaft.

I am sorry to say that these mines are not in the best condition: one of the troubles being that they are not regularly worked. The repairs in the mine are consequently let run down from motives of economy which certainly are false ones.

The Ebervale is ventilated with a very good furnace, and when examined last was found in fair condition with room for further improvement.

The Martindale mine I found very much neglected, because the airways were not kept up at the face of the mine, and the furnace, such as it is, was without fire. Those in charge of the mine are promising to put up a fan with which to ventilate. The shaft which has been opened during this year has just completed their arrangements for ventilating by having their second opening made as a slope. This should improve its sanitary condition very much. I learn that the ventilation before my last examination had been very defective.

Beal's Creek Mines—Sonman shaft, Mitchell mine, Sonman No. 1, Mentzer mine, Dysert No. 2.

The Sonman shaft is the only mine on the branch which is ventilated by a fan, and a very small inlet destroys the ventilating power of it. This mine is pretty far advanced into the hills, consequently the ventilation is becoming weak at the face of the mine; I have therefore notified those in charge to have more air forced into the face of the works, otherwise the mine is well operated and kept in good condition.

The remaining mines, it is claimed, are ventilated by furnaces, but one of the troubles with them is, that the seam of coal rises very fast. This gives a great difference of elevation which is very favorable, but they depend too much on it and neglect their furnaces At times the difference of temperature in the mines and outside is so little that no ventilation can be had, the result is, a mine filled with vitiated air wholly unfit for man or beast to breathe. The neglect of keeping the furnace fires up is one of the troubles in our mines.

Lilly Mines—Lilly slope, Sonman No. 2.

These mines are supposed to be kept ventilated by furnaces, as each has one for that purpose. They are a complete failure, as neither of

those mines have the required quantity of ventilation at all seasons of the year, even when the furnaces are well fired. The defect is caused partly by bad systems of mining and partly by poor air slopings which are too often poorly filled. Both operations, being old mines, and very extensively worked; they are run, for the most part, on the old system of single heading. With considerable open works to contend with, the natural result is the air partly escapes before reaching that part of the mine where it is required. I expect those in charge of these mines to have some improvements made in the ventilation before my next examination.

Cresson shaft.—This mine is located at Cresson, and is the deepest shaft in the district—being over 300′ in depth. As yet they have but one opening, having met with a great many troubles in the coal; they were for a long time unable to decide where to sink the second opening. Finally it was decided, and they are now working on it, until which time I have notified them that they are not to allow over 20 men in the shaft at one time. The mine is ventilated by a fan; when last examined it was well aired, but the drainage was defective. They have been very unfortunate here with their pumps giving out, causing a great deal of trouble, as the mine gives off a very large amount of water.

Gallitzin mines—Gallitzin slope, Gallitzin shaft.

Both these mines are kept in first-class condition, fan ventilation being in use in both and the most improved plans of mining practiced.

The Gallitzin slope has the tail rope system of haulage in use, which is used even in the hauling of coal from the butt or cross headings, so that the mine, with a capacity of from 1,000 to 1,200 tons a day, is worked with the use of very few mules. Both are well ventilated and drained.

The Amsbrey and Frugality mines are located on the C. & C. R. R. Upon my last examination, the Amsbrey mine was found to be a little short in the amount of air in circulation, as they were then using the furnace. They, however, were busy erecting a fan 15′ in diameter, made by the Vulcan fan builders of Wilkes-Barre, which is now in use and giving very good results.

The Dean mine No. 1 and the Rubing mine Nos. 1 and 2 are located at Frugality. They are ventilated by furnaces; the two latter mines are not very extensive, and are consequently easily ventilated. The Dean mine No. 1, though very systematically worked and carefully looked after, is a little defective at the face of some of the farthest workings in the mine, as the furnace is too weak to do the work, the drag being too much. They expect relief here in the near future by striking out through the hill at the extreme face of the headings which will reduce the drag of air about one half. Drainage, etc., in all these mines is excellent.

The Richland.—This mine is located on the C. & C. R. R., about one mile east of Dysert station; it has only recently been opened. In

November they completed the erection of double engines of 20 horse power each for hauling coal from the mine by the tail-rope system. The engine is placed at the drift mouth, and the one bull wheel is 835′ below the drift mouth at the tipple, and the other is 500′ inside the mine, making a total haulage of 1,335′, and is now working successfully.

A round trip with 25 tons can be made in about five minutes. This mine when examined last, was found in very good condition in both drainage and ventilation.

Hastings Mines—Sterling Nos. 3, 4 and 6, Oak Ridge and Mitchell mine.

These mines are located in the northern part of Cambria county. A branch from B. G. R. R. runs up to the mines, starting from La Jose.

There are here, as named, five mines now in operation, all of which are ventilated by furnaces. On my last examination they were, on the whole, found to be in pretty fair condition, though some places in the mines were defective in ventilation for the want of doors, or the bratticing up of places where the air was escaping.

At the present day one of the greatest troubles that a mine Inspector has to contend with, is the little artificies practiced by the mine-bosses, they are something with which the operator has nothing to do, they lay almost exclusively at the door of the mine-boss and it is surprising how well and successfully he can fill his position, even with the most obstinate man over him as operator or superintendent, in the matter of getting his supplies, if he is so inclined, to keep his mine in a safe and healthy condition, "where there's a will there's a way."

There are several other small mines in the county located on B. G. R. R., but, until my last examination, there were but two of them that came regularly under the law. These were the Great Bend No. 2 and the Smittle mine or the Bear Ridge Coal Company's mine.

The McCartney mine, Bland mine and Gwin mine are small operations that occasionally come under the mining laws. There are quite a number of such mines in the district, and they occasionally give me more trouble than very large mines by their neglect in complying with the law, and they are therefore reported to me. When they do come under the law and are examined they are found in a rather dilapidated condition. This is not applicable to all but to a majority of such mines.

The Great Bend mine is ventilated by a furnace, and when examined last was found to be in a very satisfactory condition. The Smittle or Bear Ridge mine was also found to be in pretty fair condition, when examined last, as regards ventilation, but the drainage was a little defective.

There is one other mine in this county located at Kittanning Point, the Delaney mine, which when examined last was in excellent condition both in drainage and ventilation.

Clearfield County Mines.

There are seven mines in this county belonging to the district, five of which are located at Coalport: Irvona Nos. 1 and 2, Oakland Nos. 1 and 2, and Great Bend No. 3. These mines are fairly well ventilated; they are very much troubled with water during the wet seasons of the year, so much so that the drains cannot carry the water off. The consequence is that they are very disagreeable for men to walk in and out of at such times. All these mines are ventilated by furnaces, and not being very extensive they can be well ventilated if properly looked after, as I consider these are. The remaining two mines are located at Irvona, National Nos 1 and 2. The first named is ventilated by a fan, and No. 2 by a furnace. The ventilation of both I consider very good and the general safety of both also well looked after.

Indiana County Mines.

The Glen Campbell mines are located on a branch of the Bell's Gap R. R., or Northwestern R. R., which intersects the main line at McKee's Station. There are five mines at this point now in operation owned by three different parties—Reakart Bros., Campbell Bros., and Passmore & Burns. I have examined four of the five, as one has been opened up since I made an examination at that point, which is owned by Passmore & Burns. I have found those mines, except one of the Campbell mines, in pretty good condition. The ventilating apparatus of the one not found so, had not been put in complete working order; hence the defect. All these mines are above water level, and are ventilated by furnaces.

Jefferson County Mines.

There are ten mines in this county belonging to the district, all but one of which are located within a radius of three miles from Punxsutawney. The Elenora mine is about six miles from Punxsutawney in a direct route over the county. West Eureka Nos. 1, 3 and 5, are ventilated by fans, and No. 10 by a furnace. All these mines are worked on the double heading plan of mining, and are well aired. The only trouble I find in them is that so much blasting is done that it causes the air to be filled with powder smoke, especially is this true in No. 5, where the air travels in one continuous current around the work. The other three mines have different splits of air to each district, which obviates that trouble somewhat. Those mines are operated by the Berwind White Coal and Coke Company.

The remaining mines are owned by the R. and P. Coal and Iron Company. Walston Nos. 2 and 3, are ventilated by a 25-foot Guibal fan, the air entering in No. 3 and returning through No. 2. The latter is an old mine, worked above water level, and is very extensive, or rather has been very extensively worked; it is now on the decline, there being little or no new work opening up; most of the work being the robbing of pillars, etc., as they intend to work the remaining part of the coal from No. 3,

which is a slope. The ventilation in No. 3 is good, but a little defective in No. 2, as all the smoke from No. 3 is carried there.

A practice is permitted in these mines which is very injurious to ventilation, and that is the use of so much black strap oil. Until that is stopped the ventilation of these mines will never be what it should for the health and comfort of those employed in them. Under the new management they propose stopping the use of this oil, and to compel all employes to use regular miners' oil. When this is done I see no reason why these mines cannot be kept in good healthy condition with their present system of airing them. No. 1 is also ventilated by a fan 20 feet in diameter. This mine is now being remodeled with the intention of putting in either a rope haulage or an electric motor, which mode has not yet been decided upon. The ventilation and drainage of this mine are right good, but will be much improved after completing the new haulage system.

The Adrian Nos. 1 and 2 are operated by the same company; each of these mines is ventilated by fans. No. 1 is the largest colliery in the district, there being over 500 men employed in and around the mine. The workings are ventilated with three different splits. On the whole they are kept in pretty fair condition. It can be said of this mine like some of the rest in this region that it requires an enormous volume of air in circulation to dilute and render harmless the great amount of powder smoke caused by the blasting of this coal and the smoke from the burning of inferior oils by the men employed. The ventilation of No. 2 I found on my last examination to be very good. The air is forced into the mine by the fan and they have openings near the face of the workings which gives them a good chance to air the mine well; the drainage is also good.

Elenora mine.—This mine is also aired by a fan, and is comparatively a new mine. It is ventilated by separate splits for each butt-heading. Upon my several examinations, I have found it each time in first-class condition as to drainage and ventilation. The plan adopted at this mine, of separate and fresh air for each heading or section of work, is the only true and proper method of ventilating mines. Until this plan is universally adopted they will not be what they should be in regard to healthfulness for men to work in.

Westmoreland County Mines.

There are four of these mines located at Latrobe: The Monastery, Latrobe, M. Saxman, and Loyalhanna shaft. In the latter the ventilation is produced by the exhaust steam from the pumps; it is inadequate to do the work at present. They are now putting in a 20-foot fan with which to ventilate this mine. The new opening adjacent to the old mine will be in operation early in the year 1891, and it will no doubt put the mine in first-class condition as it is worked on the most approved plans

of mining; haulage is done by machinery. I consider that everything in connection with the mine after the fan is in operation, will be such as to entitle it to be ranked among the model mines of the state.

The M. Saxman mine requires also a fan to ventilate with, so that the air can be forced out of the hoisting shaft (which is located in the middle of a row of ovens) to prevent the smoke from the coke ovens entering the mine and vitiating the air with the gases from them. This trouble cannot be remedied at this mine until a fan is erected at the second opening, or manway, to force the air in there and out through the hoisting shaft, *that* will insure pure air to the workings, and thus make a model mine of it in ventilation, instead of what I term now, a defective one.

Monastery mine.—This mine has in use now a fan which was put in to replace a furnace that had been in use to ventilate with, this has improved the ventilation very much; but as the mine is becoming very extensive, it requires considerable care on the part of those in charge to keep it in a good healthy condition, at the face of the workings.

The Latrobe works.—This mine has been very much improved in ventilation during the year by the replacing of their furnace with a fan 15 feet in diameter, which gives very good results. I am happy to report that on my last examination it was in excellent condition in both drainage and ventilation.

There are two other mines located at Bardenville about three miles east of Latrobe: the St Clair, and Derry shaft. There is also another mine at this point which has not been operated during 1890, except for a month or so. The first named mine is ventilated by a furnace which gives very good results as the shaft is over a 100 feet deep, and dry. They have also in this mine a boiler and engine near the furnace, the heat from which ascends the shaft. The place where the boiler is erected is shot out of the rock above the coal seam, so that there is no danger from igniting the coal and having a mine fire. The boiler is used for making steam for pumps and hauling engine which has been put in to take the place of mules in taking coal from the mine. As they have adopted the tail-rope system of haulage which is working very successfully. They are now opening up the mine to the dip, as most of their coal has been worked out above water level.

Derry shaft.—They are erecting a fan here with which to ventilate in place of the exhaust steam which was not adequate to the work. There are quite a number of men working at this mine. The system of ventilating by exhaust steam is a failure, except where there are only a few men employed. This is as well an operated mine as any in the district, and is in competent hands, only requiring a good fan in operation to make it one of the model mines in the state.

There are two other mines in this county belonging to the district, or rather three: Millwood shaft, Isabella mine and Lockport. The first

named is a shaft and is ventilated by a fan; it is always in excellent condition. On my last examination of the mine, I found a volume of 20,000 feet of air passing per minute at the very extreme face of the workings, and they were only employing at the time about 120 men.

The Isabella mine is located at Coketon. It is a slope opening and is ventilated by the heat from steam pipes which is taken down through a slope running parallel with the hauling or main slope. The ventilation from this power is only fair and is not adequate at all times and seasons. I have therefore suggested to those in charge of the mine the necessity of putting in a fan, which I think will be done during the coming year. The mine is well looked after in the division of the air, drainage and general safety.

The other mine is a small operation and is located at Lockport. It is ventilated by a furnace. When examined last it was found to be in good condition.

TABLE I—*Showing location of collieries in the Sixth Bituminous Mine District.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Argyle	Huff & Coulter	Cambria	J. P. Wilson	South Fork, Cambria county.
Aurora	Herst & Luke	"	D. W. Luke	" "
Amsbury	Cambria Coal and Coke Company	"	H. Himmelwright	Amsbury, Cambria county.
Adrian No. 1	Rochester and Pittsburgh Coal and Iron Company	Jefferson	John H. Bell	De Lancy, Jefferson county.
Adrian No. 2	" "	"	"	" "
A. J. Haws & Son	A. J. Haws & Son	Cambria	H. J. Haws	Johnstown, Cambria county.
Bens Creek plane	E. W. Mentzer	"	E. W. Mentzer	Hollidaysburg, Blair county.
Bland	Fred Bland	"	Fred Bland	Loydsville, Cambria county.
Bryson	Passmore, Burns & Company	Indiana	Thomas Bellis	Glen Campbell, Indiana county.
Bennington slope	Blair Iron and Coal Company	Blair	Martin Meahger	Gallitzin, Cambria county.
Columbia	J. L. Mitchell	Cambria	Wm. M. Smith	"
Continental No. 2	Sonman Shaft Coal Company	"	Charley Hughes	Altoona, Blair county.
Cresson shaft	Cresson Cambria Company	"	John Powell	Cresson, Cambria county.
Delany	Altoona Coal and Coke Company	"	R. C. Simpson	Box 479, Altoona, Blair county.
Dysert No. 2	Patrick Leahy	"	Canon Leahy	Lilly P. O., Cambria county.
Dysert No. 1	D. Laughman & Company	"	Thomas Leahy	" "
Dean	Cresson and Clearfield Coal and Coke Company	"	P. H. Wall	Frugality, Cambria county.
Derry shaft	Derry Coal and Coke Company	Westmoreland	E. F. Saxman	Latrobe, Westmoreland county.
Euclid	Euclid Coal Company	Cambria	Joel M. Dietrich	302 6th av., Altoona, Blair county.
Eldorado	Wray & Company	"	J. S. McCartney	Mountaindale, Cambria county.
Elenora	Rochester and Pittsburgh Coal and Iron Company	Jefferson	S. A. Rinn	Big Run, Jefferson county.
Ebervale	Hopfler & Wilson	Cambria	Edward Hughes	Portage, Cambria county.
Gallitzin shaft	Taylor & McCoy	"	J. F. McCoy	Altoona, Blair county.
Gallitzin slope	Gallitzin Coal and Coke Company	"	Wm. M. Smith	Gallitzin, Cambria county.
Great Bend No. 2	Great Bend Coal Company	"	John E. Bell	Bellwood, Blair county.
Great Bend No. 4	" "	"	"	" "
Great Bend No. 5	" "	Clearfield	"	" "
Glen More	Glenmore Coal Company	Cambria	D. R. Moore	Amsbury, Cambria county.
Glen White	Glen White Coal and Lumber Company	Blair	Valentine Eichelaub	Kittaning Point, Blair county.
Glen Wood No. 3	Glen Wood Coal Company	Indiana	C. Campbell	Glen Campbell, Indiana county.
Glen Wood No. 4	" "	"	"	" "
Horse Shoe	Altoona Coal and Coke Company	Blair	R. C. Simpson	479 P. O. box, Altoona, Blair co.
Hastings	Chest Creek Coal and Coke Company	Cambria	W. C. Shiffer	Hastings, Cambria county.
Irvona No. 1	Irvona Coal Company	Clearfield	John McNulty	Coalport, Clearfield county.
Irvona No. 2	"	"	"	"
Isabella Furnace	Isabella Furnace Company	Westmoreland	W. C. Grist	Blairsville, Indiana county.
Ingleside	Ingleside Coal Company	Cambria	Alfred Slater	Johnstown, Cambria county.
J. C. Stineman	J. C. Stineman	"	W. J. Stineman	South Fork, Cambria county.
J. C. Martin No. 1	J. C. Martin	"	John Watt	Portage, Cambria county.
Loyalhanna shaft	Loyalhanna Coal and Coke Company	Westmoreland	J. C. Menoher	Latrobe, Westmoreland county.
Latrobe Coal Works	Latrobe Coal and Coke Company	"	D. W. Jones	" "
Lockport	Boliver Coal and Coke Company	"	Wm. L. Naucarrow	Lockport, Westmoreland county.
Lemon	Blair Iron and Coal Company	Blair	Martin Meagher	Gallitzin, Cambria county.
Monastery	H. C. Frick Coal and Coke Company	Westmoreland	A. F. Downing	Latrobe, Westmoreland county.
Mountaindale	Bear Ridge Coal and Coke Company	Cambria	Joseph Smith	Mountaindale, Cambria county.
M. Saxman	M. Saxman, Jr., & Co.	Westmoreland	F. Kurman	Latrobe, Westmoreland county.
Millwood shaft	Millwood Coal and Coke Company	"	E. B. Kimmel	Millwood, Westmoreland county.

TABLE I—*Continued.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Mt. Vernon No. 1.	United Collieries Company.	Cambria.	Joseph Campbell.	Houtzdale, Clearfield county.
Mineral Point mine	Reighard and Page Heirs.	"	Emanuel Reighard.	Mineral Point, Cambria county.
National No. 1.	Philadelphia Coal and Coke Company.	Clearfield.	W. W. Helman.	Irvona, Clearfield county.
National No. 2.	" "	"	" "	" "
Oakland No. 2.	Samuel Haggerty.	"	Samuel Haggerty.	Coalport, Clearfield county.
Oak Ridge.	Dunwidie & Campbell.	Cambria.	James Campbell.	Hastings, Cambria county.
Oakland No. 1.	Samuel Haggerty.	Clearfield.	Samuel Haggerty.	Coalport, Clearfield county.
Painter.	Lambert, Scott & Co.	Cambria.	John Saxton.	Portage, Cambria county.
Porter shafts.	Dennison, Porter & Co.	Blair.	C. H. Porter.	Hollidaysburg, Blair county.
Penn.	Reakart Brothers.	Indiana.	W. J. Treversick.	Glen Campbell, Indiana county.
Rabino.	Cresson and Clearfield Coal and Coke Company.	Cambria.	P. H. Wall.	Frugality, Cambria county.
Richland No. 1.	Morrison & Stevens.	"	George Bell.	Dysert, Cambria county.
South Fork.	George B. Stineman.	"	George B. Stineman.	South Fork, Cambria county
Sonman No. 1.	W. H. Piper & Co.	"	John Leahy.	Lilly, Cambria county.
Sonman No. 2.	" "	"	"	" "
Standard.	Charles A. Hughes.	"	R. Hughes.	Altoona, Blair county.
S. H. Smith.	Ligonier Coal Company.	Westmoreland.	Daniel Craig.	Latrobe, Westmoreland county.
St. Clair.	St. Clair Coal and Coke Company.	"	P. J. Slavin.	Bradenville, Westmoreland county
Sterling No. 3.	Sterling Coal Company.	Cambria.	T. W. Thompson.	Hastings, Cambria county.
Sterling No. 4.	" "	"	"	" "
Sterling No. 6.	" "	"	"	" "
Sonman shaft.	Sonman Shaft Coal Company.	"	James Shoemaker.	Myra P. O., Cambria county
Tipton Run.	R. H. Spindly.	Blair.	R. H. Spindley.	Altoona, Blair county.
Vansoyoc.	John Gwin & Son.	Cambria.	L. M. Groin.	Mountaindale, Cambria county.
Vanormer.	Woffendon & Lait.	"	James Woffendon.	Vanormer P. O., Cambria county.
West Eureka No. 1.	Berwind White Coal Company.	Jefferson.	Thomas Fisher.	Horatio, Jefferson county.
West Eureka No. 3.	" "	"	"	" "
West Eureka No. 5.	" "	"	"	" "
West Eureka No. 10.	" "	"	"	" "
Webster No. 3.	John C. Scott & Sons.	Cambria.	Phillip Hartman.	South Fork, Cambria county.
Wallston 1, 2 and 5.	R. & P. Coal and Iron Company.	Jefferson.	G. W. Snyder.	Wallston Mines, Jefferson county.

TABLE NO. II—*Gives the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Sixth Bituminous Mining District, for the year ending December 31, 1891.*

NAME OF COLLIERIES.	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Argyle	Cambria,	156,955		156,955	315	168			1,020		27		
Aurora	"	29,008		29,008	231	42			360		5		
Amsbury	"	55,445	4,295	48,669	252	96			449	2	6		12
Adrian No. 1	Jefferson,	282,602	78,494	28,383	236	523		4		4	55		440
Adrian No. 2	"	138,298		138,298	246	201	2	1		2	12		
A. G. Haws & Son	Cambria,	12,109			240	33			64	2	2		
Ben's Creek Plane	"	61,655		61,655	240	125	2		125		11		
Bland	"	3,000		6,000	150	14					2		
Bryson	Indiana,	20,478		20,478	87	56			121		2		
Bennington Slope	Blair,	40,380	15,745	18,387	300	117			36	5	13		100
Cushon	Cambria,	43,815		43,815	300	50			100		7		
Columbia	"	63,341		63,341	217	98			199		5		
Continental No. 2	"	33,969		33,969	159	71				1	5		
Cresson Shaft	"	38,883		37,522	234	45			291	3	3		
Delany	"	130,795	25,000	87,196	274	274		1	750	2	14		102
Dysert No. 2	"	70,782		70,782	208	131			180		15		
Dysert No. 1	"	9,274		9,274	150	29					2		12
Dean	"	180,000		180,000	264	169		1	700		8		
Derry Shaft	Westmoreland,	152,420	92,190	27,664	274	210	1			3	11		182
Euclid	Cambria,	16,873		16,473	255	34					4		
Eldorado	"	10,871		10,871	235	12			25				
Elenora	Jefferson,	143,607		143,607	260	205		1	800	2	26		
Ebervale	Cambria,	15,000		15,000	136	35			75		4		
Gallitzin Shaft	"	268,664	75,156	56,947	280	349	2			7	21		240
Gallitzin Slope	"	221,602	66,274	110,150	229	369			902	5	31		153
Great Bend No. 2	"	55,500		55,500	300	70			650		7		
Great Bend No. 4	"	800		800	24	26			25		1		

TABLE II—*Continued.*

NAMES OF COLLIERIES.	Location County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Great Bend No. 3,	Clearfield,	37,900		37,900	280	44	1	1			5		
Glenmore,	Cambria,	2,562		2,562	62	16					1		
Glen White,	Blair,	48,350	31,250		300	144			200	2	12		98
Glen Wood No. 3,	Indiana,	60,981		60,981	180	108			432		7		
Glen Wood No. 4,	"												
Horse Shoe,	Blair,	21,034		21,034	270	69			67	2	4		
Hastings,	Cambria,	125,200	57,912	29,797	255	226	1	2	704	1	21		152
Ingleside,	"	15,115		15,115	130	65			70		4		
Irvona No. 1,	Clearfield,	29,643	18,438	2,139	177	175	1		100	4	14		80
Irvona No. 2,	"	9,235		9,235	86	57			10	1	4		
Isabela,	Westmoreland,	165,000	99,000		300	211				7	24		251
J. C. Martin No. 1,	Cambria,	42,000	4,800	33,840	258	58			350		4		12
J. C. Stineman,	"	80,931		80,931	251	129	1	1	500		18		
Lemon,	Blair,	118,836	37,152	57,107	300	155		1	300		14		
Loyalhanna,	Westmoreland,	200,897	18,005	127,630	250	228	1	1		8	24		240
Latrobe Coal Works,	"	161,586	54,750	76,562	306	173		1		3	18		100
Lockport,	"	21,300	12,299	2,222	281	44			124	1	3		53
Monastery,	"	160,625	109,328		285	216		2		10	19		208
Mountaindale,	Cambria,	20,466	10,705	3,409	223	61			96	1	3		40
M. Saxman,	Westmoreland,	104,413	34,254	51,982	306	115				1	12		60
Millwood Shaft,	"	76,630		73,030	250	119	1			6	8		
Mount Vernon No. 4,	Cambria,	26,606		26,606	125	49					7		
Mineral Point Mine,	"	13,956		13,856	299	15			125		2		
National No. 1,	Clearfield,	49,203	46,000	10,985	303	120			150	1	3		100
National No 2,	"	59,370		28,588	271	121			300		8		
Oakland No. 2,	"	1,607		1,607	30	26			12		2		
Oak Ridge,	Cambria,	35,091		34,532	191	48			169		3		
Oakland No. 1,	Clearfield,	15,400		15,193	163	42			120	1	4		
Painter,	Cambria,	15,104		14,799	212	35			93	2	2		
Porter Shaft,	Blair,	36,391		36,391	245	91			10	2	18		
Penn,	Indiana,	39,330		39,280	287	47					6		

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TABLE III—*Showing the number of each class of employes at each colliery in the Sixth Bituminous Mine District during the year 1890.*

NAMES OF COLLIERIES.	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals—inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' boys under 16 years of age.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Employes at coke ovens.	All company men.	Superintendent, book keepers and clerks.	Total outside.	
Argyle	Cambria	1	120	14	2	18		155	1	3			8	1	13	168
Aurora	"	1	32		1	4		38	1				2	1	4	42
Amsbury	"	1	65	3	6	6	2	83	1	2	1		4	2	13	96
Adrian No. 1	Jefferson	1	330	10	8	38	9	396	2	7	5	90	20	3	127	523
Adrian No. 2	"	1	170	4	3	13	2	193		1	2		5		8	201
A. G. Haws & Son	Cambria	1	24		3	2		30			2			1	13	33
Ben's Creek Plane	"	1	88	9	2	10	5	115	1	1			5	3	10	125
Bland	"	1	10	1		2		14								14
Bryson	Indiana	1	46	2	1	2	1	53		2				1	3	56
Bennington slope	Blair	1	45	8	2	9	3	68	1	2			38	5	49	117
Cresson shaft	Cambria	1	35	4	1	3		39		1	3			2	6	50
Columbia	"	1	78	6	1	5	3	94		1					4	98
Cushon	"	1	35		2	6	2	46		1			2	1	4	50
Continental No. 2	"	1	47	9	1	6	3	67			1		2	1	4	71
Delany	"	1	189	13	4	11	6	224	1	2	2	32	11	2	50	274
Dysert No. 2	"	1	100	3	4	15	3	126	1	1				3	5	131
Dysert No. 1	"	1	14	3	2	4	1	25	1	1			2		4	29
Dean	"	1	120	15	10	8	8	162	1	2				4	7	169
Derry shaft	Westmoreland	1	110		12	14	3	140	2	2	3	60		3	70	210
Euclid	Cambria	1	26	1		3	1	32					1	1	2	34
Elderado	"	1	9		1			11						1	1	12
Eleanora	Jefferson	1	157	15	3	11	2	189	1	2	2		9	2	16	205
Ebervale	Cambria	1	23	1	4	4	1	34						1	1	35
Gallitzin shaft	"	1	200	21	6	18	7	253	1	4	3	76	6	6	96	349
Gallitzin slope	"	1	234	14	9	14	10	282	1	4	4	67	10	1	87	369
Great Bend No. 2	"	1	42	9	5	6	3	66	1	1				2	4	70
Great Bend No. 4	"	1	19		2	1		23		1				2	3	26
Great Bend No 3	Clearfield	1	33		3	3		40		1			1	2	4	44
Glenmore	Cambria	1	13			1		15						1	1	16
Glenwhite	Blair	1	55	5	6	7	4	78	1	2	3	29	19	2	56	144
Glenwood No. 3	Indiana	1	90	2	2	5		100	1	1			3	3	8	108
Glenwood No. 4	"															
Horse Shoe	Blair	1	49	4	1	5	2	62		2	2		3		7	69

Hastings	Cambria	1	140	2	2	7	5	157	1	2	1	56	8	1	69	226
Inglesido	"	1	55	2		4		62					2	1	3	65
Irvona No. 1	Clearfield	1	60		30	7	2	109	1	1	1	60		3	66	175
Irvona No. 2	"	1	39		10	2		52					5		5	57
Isabella	Westmoreland	1	100		13	12	2	127	1	5	6	41	29	2	84	211
J. C. Martin No. 1	Cambria	1	46	2	1	4		54				3		1	4	58
J. C. Stineman	"	1	92	5	2	16	4	120		2			6	1	9	129
Lemon	Blair	1	120	10	3	10		144	1	1			8	1	11	155
Loyalhanna	Westmoreland	1	165		7	15	7	195	1	4	5	10	10	4	33	228
Latrobe Coal Works	"	1	107		5	11	1	125	1	3	3	20	19	2	48	173
Lockport	"	1	19	1		2		23	1	1	1	17		1	21	44
Monastery	"	1	100	5	5	11	3	125	2	3	6	78		2	91	216
Mountaindale	Cambria	1	34	3	1	2	2	42	1	1	1	14		2	19	61
M. Saxman	Westmoreland	1	50		4	10	4	79		1	1	18	25	1	46	115
Millwood shaft	"	1	70	12	3	9	4	100		3	7		8	1	19	119
Mount Vernon No. 4	Cambria	1	34	2	1	5	2	45		1			3		4	49
Mineral Point Mine	"	1	9				2	12		1			1	1	3	15
National No. 1	Clearfield	1	50	6	1	2	2	62	1	1		50	4	2	58	120
National No. 2	"	1	80	18	2	7	6	114		1			5	1	7	121
Oakland No. 2	"	1	20			2		23	1				1	1	3	26
Oak Ridge	Cambria	1	38	1		2	3	45					3		3	48
Oakland No. 1	Clearfield	1	26	5	1	3		36	1	1	1		2	1	6	42
Painter	Cambria	1	22	2	2	2		29		1	2		2	1	6	35
Porter shaft	Blair	1	45	13	4	14	2	78	1	1	1	5	4	1	13	91
Penn	Indiana	1	35	3	1	4		44	1	1				1	3	47
Rubino	Cambria	1	90	10	11	7	8	127	1	2		38		4	45	172
Richland No. 1	"	1	18	3	1	1	1	25			1		2		3	28
South Fork	"	1	27	2		2	1	33	1	1	1			1	4	37
Sonman No. 1	"	1	200	30	2	20	2	255	1	1			12	1	15	270
Sonman No. 2	"	1	120	10	2	14	2	149	1	1		6	12	1	21	160
Standard	"	1	45	5	3	5	3	62		1			1	1	3	65
S. H. Smith	Westmoreland	1	30	3	2	2		38		1				1	2	40
St. Clair	"	1	47	2	7	8		65	1	2	1	15	10	2	31	96
Sterling No. 3	Cambria	1	74	5		3	1	84					4	2	6	90
Sterling No. 4	"	1	61		1	3		66		2	2		7	2	13	79
Sterling No. 6	"	1	28			2	1	32	1	1		2	2	2	8	40
Sonman shaft	"	1	100	2	4	9	4	120	1	1	1		3		6	126
Tipton	Blair	1	34	8	3	3	2	51		1			1	2	4	55
Vansoyoc	Cambria	1	8			1		10						1	1	11
Vanomer	"	1	11	2	2	1		17			1		1	2	4	21
West Eureka No. 1	Jefferson	1	177	23	2	23	4	230	1	3	2	37	6	2	51	281
West Eureka No. 2	"	1	274	31	5	28	15	354	1	3	4	38	12	2	60	414
West Eureka No. 5	"	1	104	33	1	10	4	165	1	3	4		5	2	15	178
West Eureka No. 10	"	1	146	9	5	6	5	172	1	3			6	2	12	184
Walston Nos. 1, 2 and 3	"	2	382		25	54	13	476	2	7	9	169	8	3	198	672
Webster No. 3	Cambria	1	178	32	5	27	15	258	1	3	2		9	2	17	275
Total		79	6,328	472	327	647	213	8,042	47	119	99	1,072	367	121	1,782	9,863

TABLE IV—*List of Fatal Accidents occurring in and about the Mines of the Sixth Bituminous Mine District, for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON.	Occupation.	Age.	Married.	No. of children.	Name of colliery.	Location County.	Nature and cause of accident.
Apr. 1.	Martin Sigg.	Miner.	38	M.	5	Webster No. 3.	Cambria.	Was killed while in the act of undermining his coal; a sprag should have been under the coal which would have saved his life.
9.	Daniel Gwin.	"	56	"	9	Great Bend No. 3.	Clearfield.	Was killed instantly by a fall of bony coal; this was what I would term an accident that could not have been foreseen, the coal and rock giving way at the back, where the miner could not see it, nor even could it have been suspected in that particular place, it was therefore a pure accident.
15.	John Bosolla.	"	45	"		Adrian No. 1.	Jefferson.	Was killed by a fall of rock for the want of propping more carefully.
17.	Jacob Short.	"	19	S.		Loyalhanna shaft.	Westmoreland.	Deceased was drawing a pillar and had his place well propped up and was knocking out some coal near the top of the seam when he loosened what afterwards proved to be a "horseback," and it fell upon him. It was an unavoidable accident, and is one of the most dangerous kind of rocks to be met with in our mines.
26.	David Earnest.	Driver.	35	M.	6	Plain mine.	Cambria.	Was crushed to death between the loaded cars and the upright timbers which held the drum at the top of the plane; when unhitching his mule he jumped to the wrong side and was caught as stated.
May 22.	John Partolet.	Cager.	23	S.		Gallitzin shaft.		Was killed by the cage catching him while trying to run under it while it was descending. No one knows why he wanted to cross under the cage as he had nothing to do on the opposite side, and if he had, they have a way to cross alongside of the shaft. It was seemingly a case of suicide.
June 24	Wm. Hutzel.	Miner.	38	M.	5	J. R. Stineman.	"	Killed by a fall of draw slate while in the act of loading a wagon; fall was caused by insufficient propping of the roof.
24.	Edward George.	"	18	S.		Plain mine.	"	Was killed while in another man's place; he went to visit another man as stated, who worked in a heading, which had just passed through a fault, and there was a prop standing in the middle of the road to hold up what was supposed to be a dangerous piece of rock, and this rock gave way from the side with a slip and shoved the prop out and fell upon George; he only lived about one hour after being struck.
July 8.	John Silkoskeg.	"	28	M.	3	Adrian No. 2.	Jefferson.	Deceased was in the act of mining, when a very small piece of rock from the roof fell upon him striking him below the ribs and crushing him internally; the coal being very high the rock had a good distance to fall, which caused such serious injury; he only lived about twelve or fourteen hours after the accident.

9.	Mickle Watsmuske,	"	22	S.	Gallitzin shaft,	Cambria,	Was killed by a lump of loose coal falling upon him, while undermining his coal; with a little care he could have prevented the accident by examining and putting a sprag under it.
16.	Wm. Story,	"	18	"	Millwood shaft,	Westmoreland,	Was killed by a fall of coal; the deceased was mining under a very large quantity of coal, possibly eight or ten tons, without any sprags, and suddenly it fell upon him killing him instantly.
Aug. 8.	Jacob Scarlo,	"	40	M.	3 Monastery,	"	Was killed by a fall of roof in drawing back a rib; careful propping would have prevented the accident.
Sept. 3.	Frank Gondoski,	"	42	"	2 Adrian No. 2,	Jefferson,	Was killed by a fall of rock which should have been propped more safely, as there were not enough of props up in his place to make it safe; he was not a good practical miner.
Oct. 11.	Charles A. Beaver,	"	12	S.	Columbia No. 4,	Cambria,	Was killed by fall of rock; the mine boss had told him to stand three props before loading any more coal, but he did not do so and the rock fell and seriously injured him; he lived for three days after the accident.
16.	John McDonald,	"	20	"	Webster No. 3,	"	Was killed by a fall of rock while in the act of undermining his coal; his brother was also slightly injured at same time.

TABLE V—*List of Non-Fatal Accidents occurring in and about the mines of the Sixth Bituminous Mine District for the year ending December 31, 1890.*

Date of accident	NAME OF PERSONS.	Occupation.	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident
Feb. 18,	Joseph Henry,	Miner,	23	S.	Standard,	Cambria,	Slightly injured by being cut on the head by a fall of bony coal; on commencing to draw a pillar he neglected to secure the edge of the rock with a prop.
21,	Thomas Brady,	"	30	S.	Delany,	"	Was injured by a fall of coal and bony; caused by his neglect in not spragging his coal.
28,	Joseph Halliday,	"	24	S.	Sonman shaft,	"	Collar-bone broken while undermining coal; he struck a slip in his mining which caused the coal to fall.
Mar. 13,	Joseph Doubleske,	"	35	M.	"	"	Left leg broken above the knee; while walking under the cage while it was descending it caught him.
24,	John Softcow,	"	26	S.	R. & P. Coal and Iron Co.,	Jefferson,	Leg broken below the knee; caused by fall of slate at face of his room.
Apr. 14,	J. Y. Parks,	"	21	S.	W. H. Piper & Co. or Sonman mines,	Cambria,	Skull fractured by a fall of coal.
May 1,	Wall Stonebreaker,	Driver,	21	S.	No. 2 Walston,	Jefferson,	Fell in front of a loaded car which ran over him crushing him pretty badly about the body.
4,	Wm. Dougherty,	Miner,	40	S.	Hastings,	Cambria,	Foot badly mashed, necessitating amputation some time after.
19,	John Petrick,	"	28	M.	No. 2 Walston,	Jefferson,	These men were hurt about the bodies by a fall of roof in their own room for want of propping.
19,	Andrew Courshock,	"	26	M.			
20,	Dan. Knick,	Driver,	20	S.	Adrain No. 2,	"	Was caught by the wheel of the car while trying to get out of the road and it struck him on the leg making a bad break.
21,	Frank Iehner,	Door-boy,			Walston No. 3,	"	Was standing in the way of a passing car and the sprag in the wheel struck him on the leg slightly injuring him.
June 10,	Simon Quashnock,	Driver,	24	S.	Adrain No. 1,	"	Slipped under the car and had two of his ribs crushed.
July 24,	Frank Johns,		26	M.	J. C. Stineman,	Cambria,	Was slightly hurt by a fall of draw slate.
28,	Henry Clark,	Driver,	18	S.	West Eureka No. 2,	Jefferson,	Was caught by a car running away, striking him and breaking his leg.
Aug. 12,	Antonio Morasko,	Miner,	32	S.	Adrain No. 1,	"	Broken leg; caused by a fall of coal for want of spragging.
19,	Alexander Lawson,	Driver,	20	M.	West Eureka No. 2,	"	Leg broken and crushed badly by four loaded cars running over it; his leg was afterwards amputated.
Oct. 15,	Fred. Uyack,	"	30	S.	Adrain No. 1,	"	Hurt by slipping under the wheels of a moving car; was not seriously injured.

16.	James McDonald,	Miner,	20	S.	Webster No. 3,	Cambria,	Leg broken by a fall of rock.
28.	James Brown,	Driver,		S.	Adrain No. 1,		Was struck by hauling-rope which broke his leg.
Dec. 2.	Alec Latsac,		19	S.		Jefferson,	The sprag in the wheel of a car caught him and threw him under the trip and cars went over his leg, which afterwards had to be amputated.
16.	Nathan H. Swope,	Miner,	38	M.	Irvona No. 1,	Clearfield,	Was slightly injured by a fall of rock.
26.	Emula Dandra,		38	M.	Hastings,	Cambria,	Was caught between car and rib; his collar-bone was broken.
28.	Joseph McClain,		45	M.	Elenora,	Jefferson,	Leg broken near the ankle by a fall of rock, about 150 pounds, falling on it from the roof.

SEVENTH BITUMINOUS DISTRICT.

(ALLEGHENY, WASHINGTON AND WESTMORELAND COUNTIES.)

OFFICE OF THE INSPECTOR OF MINES,
IDLEWOOD, ALLEGHENY COUNTY, *March, 1891.*

HON. THOMAS J. STEWART, *Secretary of Internal Affairs:*

SIR: I have the honor to present for your consideration my annual report of the Seventh Bituminous coal district, for the year 1890. The past year has been one of general activity in the coal trade in this district, and the increase of production over that of the previous year amounts to 834,098 tons, and but for the scarcity of miners during the summer season the output would have been still further increased. Nine persons were killed and fifty-three injured in and about the mines during the year, being one death for every 508,036 tons of coal mined, and one person injured for every 86,270 mined. A large number of the personal injuries were not of a serious character, which is a very gratifying result as compared with previous years, and with good discipline, which is greatly needed in our mines, there may be some hopes of keeping the accidents down to this ratio. As long as coal is mined accidents will occur, but stringent rules and strict discipline is the one thing needful to keep such accidents down to a minimum point, and I trust the law will be so amended by the present legislature as to afford some prospect of obtaining such discipline.

Although the sanitary condition of some of the mines is not what it should be, yet we must admit that in very many instances there is a general improvement in this direction. During the year several furnaces and fans have been provided for ventilating purposes, and several others are being erected at the present time. Formerly when a ventilating apparatus was provided its power usually was so limited as to render it almost useless in a very short time, which is one of the principal causes of poor ventilation in our mines, at the present time those primeval contrivances, long forgotten in older mining regions, are giving way to modern and effective appliances, but the change is by no means as speedy as could be be desired.

Many of the mines in this section are extended a long way from the tipples, and the cost of underground haulage, where done by horses or mules, is quite an item in the cost of production. The wire rope system of haulage is in use in about twenty-two mines in this district, and it could be adopted in many others to good advantage. The total length

of wire line in use in the above mines is about 100,000 yards, or 57 miles, and varies in size from seven-eighths to one-half inch in diameter. The life of a rope depends more upon the care taken of it than upon the aggregate tonnage hauled. On a favorable even grade, with dry roads, a good road bed, and the rope properly tarred at regular intervals, a good rope will probably last in constant use about five and a half or six years. The number of mules required to do the work now being done by the ropes would be about 510. This system of haulage in general admits of a saving to the operators and is of great benefit to the mines from a sanitary point of view. As a rule, the main hauling roads are also used as the main intake for the ventilation, and if a large number of mules are employed thereon the air currents are more or less vitiated before reaching the working places of the miners, which source of pollution is obviated by the use of the wire-rope system. With this report will be found the usual tables, together with a paper giving the history, progress and future prospects of the coal trade of Allegheny county, written by Selwyn Taylor, Esq., mining engineer and a member of the present state board of examiners appointed to examine candinates for mine Inspectors. Mr. Taylor is widely known and has a large practice in this region, and his paper will be of great value and interest to the mining community of this section.

Yours respectfully,

JAMES BLICK.

Total production of run of mine, coal in tons of 2,000 pounds each,	4,572,325
Total production in tons of coke,	14,216
Number of mines in district,	72
Number of persons employed inside,	7,637
Number of persons employed outside,	718
Total number of persons employed,	8,355
Number of persons killed in and about the mines,	9
Number of non-fatal injuries,	53
Number of wives made widows by above fatalities,	3
Number of orphans from same cause,	5
Number of tons of coal produced per life lost,	508,036+
Number of persons employed per life lost,	927+
Number of tons of coal produced per person injured,	86,270+
Number of persons employed per non-fatal injury,	157+
Number of horses and mules employed,	516
Number of steam boilers in use,	100
Number of hauling and hoisting engines used,	44
Number of steam pumps used for drainage,	46
Number of miles of wire rope used for haulage (about),	57

Description and General Condition of Mines and Improvements Made During the Past Year.

Mines on the Monongahela and Youghiogheny Rivers.

The Castle Shannon and Ormsby mines.—Located near Castle Shannon, are in a reasonably good sanitary condition, with better prospects for trade than for several years past. The product of both mines is used for local trade in the city of Pittsburgh, and as the supply of natural gas is diminishing it is reasonable to expect a large increase in the output of these mines. The quantity of air in circulation in each mine is 13,000 and 19,000 cubic feet per minute respectively, which is ample for the present number of employes.

Beck's Run and Hays Street Run Nos. 2 and 3.—These mines are in good condition. During the past year a large double ventilating furnace has been erected in No. 3 mine, which is used to ventilate both No. 2 and No. 3. This is the largest and best furnace in this district. It is of the same pattern as the Beck's Run furnace, but of larger dimensions, and cost about three thousand dollars for its erection. Quantity of air produced when last measured, 57,600 feet per minute, with only one fire in operation. The full capacity of the furnace with both parts fired, is about 80,000 cubic feet per minute. Quantity of air in circulation in the Beck's Run mine when last measured was 48,500 feet per minute, the same being in each case well distributed to the different parts of the mines.

Walton.—The ventilation in the new workings west of the main tunnel was not up to the requirements, but they were at the time of my last visit erecting a ventilating fan for this part of the mine, and I have since been informed that the ventilation is now in good condition. The quantity of air passing at the furnace in the old part of mine when last measured was 26,000 feet per minute, and this part of the mine was in good order.

M. G. C. Co. No. 1 mine.—This mine is in good order; a twelve-foot fan has been provided to produce ventilation, it is operated by a three-horse power electric motor; quantity of air produced 28,300 feet per minute, which amount is ample for present needs, but when it is found necessary to run the fan faster, a more powerful motor will be required.

Street Run.—This mine has only been in operation for a short time during the past year, and is idle at the present time, with no immediate prospects of an early resumption of operations. The mine was in good condition when last visited.

Bellwood.—Is in a good sanitary condition, and well managed; quantity of air in circulation when last measured 38,080 feet per minute.

Penny.—Was in pretty good order when last visited on December 10. A small furnace was in operation producing about 10,000 feet of air per minute. About 25 miners are employed taking out pillars and entry stumps. It is difficult to work some parts of this mine in the summer season

on account of the very large quantity of black-damp encountered, and the general absence of airways and the proper system of ventilation to carry it away.

Cornell and Werling and Yough mine No. 2.—These mines are operated by W. H. Brown's Sons and are in good condition; quantity of air passing in each mine when last measured were 28,000 and 41,000 cubic feet per minute respectively, but each furnace is capable of producing a much larger volume of air-current when fired to its full capacity.

Dravo.—At the time of my last visit the roof over the main change parting was in a dangerous condition, for the want of being properly timbered. I instructed the manager that suitable timbers should be provided and the roof made secure forthwith, other parts of the mine were in reasonably good condition; quantity of air in circulation about 10,000 cubic feet per minute which is sufficient for present needs.

The mines operated by the Youghiogheny River Coal Company are four in number, namely: Ocean Nos. 2, 4, 5 and Southwest, and are all in very fair condition. My last air measurements were No. 2, 39,680 feet, No. 5, 53,000 feet, and for No. 4 and Southwest, which are both ventilated by the same furnace, 40,000 cubic feet per minute. The volume of air in No. 4 and the Southwest is an increase over previous measurements caused by the distance of travel being reduced, and the system of ventilation improved by splitting the current, and ventilating the mines in sections. All of these mines are worked on the double-entry plan, which permits a good circulation of the air-current around the face of the workings where it is most needed.

Pacific. There is a noticeable improvement in the ventilation of this mine. The quantity of air in circulation at the time of my last visit was 29,000 feet, which is an increase over previous measurement, but I observed that some of the doors used for the purpose of conducting the air to the face of the mine were carelessly left standing open. I instructed the mine-boss to give proper attention to keeping the doors closed in the future.

West Newton shaft No. 2.—A twenty-foot fan has been provided at this mine. They have also provided an escapement shaft at the face of the mine, and the workings are now in good condition in all respects; quantity of air passing when last measured 33,600 feet per minute, but this amount can be increased if necessary.

Port Royal No. 2.—This mine is in good condition; a large amount of fire-damp is generated in some parts of the workings, but there is a good circulation of air passing through the working places; the mine is carefully and skilfully managed, and the health and safety of the men properly guarded. Quantity of air passing when last measured 63,325 feet per minute.

Mines on the Little Saw Mill Run Railroad.

Enterprise.—The general condition of this mine is favorable. The workings are very extensive and it requires a large flow of air current to keep the working places and roadways in a safe and healthy condition. The roadways and drainage are in good shape. Total quantity of air passing at the inlets, 48,500 feet per minute. It is the intention of the operator to enlarge the upcast shaft and to provide a larger fan in the near future, the fan in use at the present time is 16′ in diameter. In No. 1 division they are working beside the old Long mine, which contains a large body of water, but they are leaving a larger pillar of coal for protection, and the water will be tapped and drained away as soon as arrangements to that end can be made.

Venture.—The ventilation of this mine is below the requirements. They are at present making arrangements to erect a new fan, the fan in present use is 16′ in diameter, of the Guibal pattern, but on account of its unfavorable location its capacity is very limited. Quantity of air passing when last measured was 10,800 cubic feet per minute.

Fox.—At the time of my last visit this mine was not in good condition. The main airway had become nearly closed by roof falls and several of the working places were driven too far in advance of the air-current, and as a result of these defects there was very little ventilation at the face of the mine where most needed. Number of cubic feet of air passing at the outlet was 7,900. Number of miners employed about forty.

Mines on the Pan Handle Railroad.

Idlewood.—This mine has changed hands and resumed operations after a long stoppage. At the time of my first visit the ventilation was very defective, but they have since cleaned up the airways, repaired the stopping and doors and changed the system of working from single to double entry, so that its condition is very much improved, but there is still room for further improvement. The quantity of air passing at the outlet when last measured was 18,000 feet per minute.

Grant.—This mine is in very poor condition. The roadways are nothing better than mud holes, and will bear a fair comparison to our country roads during a wet open winter, the ventilation in some parts of the mine also is no better than it should be. They are at present building a small ventilating furnace which will improve the ventilation. Total quantity of air passing when last measured 14,000 feet per minute.

Fort Pitt.—Was when last visited found in pretty good order, with the exception of several rooms in one of the entries being worked too far in advance of the air-current. The quantity of air passing at the outlet was 17,000 feet per minute.

Cherry.—Is in much better condition than formerly, the main tunnel has been much improved, holes for shelter have been made and the tunnel enlarged where necessary, so that the drivers can now do their work

with safety. At the time of my last visit all parts of the mine were pretty well ventilated. The furnace was producing 16,100 cubic feet of air per minute.

Nickle Plate.—The roads are wet and muddy. The cover is shallow and when the pillars are taken out the strata breaks to the surface causing a large influx of surface water. The coal bed at this point is also undulating making good drainage rather difficult of attainment. The mine is well ventilated. Quantity of air at the outlet 42,000 feet per minute.

Brier Hill mine.—Operated by the same company; is in good condition. The roads in this mine are in good condition and well drained. The ventilation is also favorable. Number of cubic feet of air passing when last measured 35,200.

Mansfield and Erie.—Is in somewhat better condition than usual; all parts of the mine were reasonably well ventilated when last visited, but the condition of the roadways were not of the best; quantity of air passing, 9,500 feet per minute.

Boyd.—A new furnace has been built which will produce about 30,000 feet of air per minute, so that there need be no further complaints about poor ventilation. The general hap-hazard way in which operations were formerly conducted, has been the cause of bringing a creep on the main tunnel, which has been troublesome and expensive to the present operators.

Oak Ridge.—At the time of my last visit the ventilation was not very brisk, but they were making a new airway to improve the same. Part of the mine is flooded with water from the National mine, but they have driven an entry to the outcrop which will give them good natural drainage and prevent the water from raising any higher. Average amount of air in circulation, 9,570 feet per minute.

National.—This mine is flooded with water. The boilers, pumps, road material, and other mine equipments being all under water. At present they are making no effort to drain the water out, but are opening into a new field of coal near to the drift mouth. About thirty men are employed. Ventilation is produced by a small temporary furnace. The quantity of air produced is about 7,000 feet per minute. During the month of November the men working in the main tunnel, while passing through a clay vein, struck a large feeder of explosive gas, which ignited from their open lights, and the men failing to extinguish it, set fire to the coal, which necessitated the building of bulk-heads and flooding the entries with water to prevent the fire from spreading. After it was extinguished it was found to be a difficult matter to open the bulk-heads on account of the large quantity of gas generated and the very limited amount of air at command. A new ventilating apparatus will be provided as soon as a convenient location is reached.

Star.—Is in somewhat better condition than usual, but there is yet room for much improvement. The volume of air is limited, and to properly rectify matters requires a new ventilating furnace placed in a more suitable location. The quantity of air in circulation when last measured was 7,300 feet per minute.

Willow Grove.—They have moved the fan to a more suitable location for the present workings, formerly a considerable portion of the air passing through the fan escaped through the old workings and through surface breaks into the main return airway, and was of no benefit to the mine, but under the present arrangements all the air produced can be utilized for the efficient ventilation of the workings. The quantity of air passing when last measured was 20,000 feet per minute, which was rather below the requirements. I requested the mine-boss to increase the speed of the fan, which request he at at once complied with. General condition of mine favorable. The Jumbo mine, operated under the same management, is in pretty good order, with the exception of one or two of the entries being rather poorly supplied with ventilation. They will as soon as possible make provisions to split the air-current and ventilate the mine in sections, which will be an improvement upon the present mode of ventilation. Quantity of air passing 45,200 feet per minute.

Laurel Hill.—A 25′ diameter fan, 8′ wide has been provided at this mine, the fan is erected at the top of a new shaft which has been sunk at the face of the mine for that purpose. The fan and its erection and the sinking of the shaft would cost several thousand dollars. When the fan was running at forty-four revolutions, I measured a volume of 111,600 cubic feet of air per minute passing into the mine. The fan acts as an exhaust in the winter, and on the force principle in the summer. If good air-ways are kept and a good system of ventilation is maintained in the mine, there need be no further complaints about poor ventilation in the future, for the operator has certainly spared no expense in providing an apparatus which is capable of producing all the ventilation required, and it now depends upon the inside managers to make proper use of it. This is a large and valuable property, and no one would be more gratified than myself, to know that it was skillfully and carefully managed for the best interest of all parties concerned. The fan at present is run at a speed to produce about 70,000 feet of air per minute, that quantity being sufficient for present needs. At the time of my last visit the roadways in one part of the mine were flooded with water caused by by the late heavy rainfall, and one of the pumps is out of order. They are at present sinking a hoisting shaft at the face of the mine, with a view of doing away with the present long haul. They are also opening into a new field of coal nearer the present pit-mouth, this coal will be hauled to the tipple now in use, and a new tipple will be built at the new hoisting shaft. At the time of my last visit only about 12 men were working in this new field of coal, which is a continuation of the old mine

abandoned some years ago, and which as yet is only provided with one available opening. In No. 2 mine, operated by same company, they have been rather unfortunate during the past year, having had two fires in the mine, one at the bottom of the shaft and the other at the face of one of the rooms: the latter was caused by a miner igniting a feeder of gas, but the cause of the former is unknown, but both were rather difficult to overcome. When last visited this mine was not in the best condition. There were 22,000 feet of air per minute passing into the mine, but it was not very well distributed to the working places, some of the roadways were also very wet, but the mine being a new shaft opening and hitherto making a large amount of water, makes it very difficult to keep it free from water at all times.

Black Diamond.—Is not in best condition. Quantity of air passing 6,000 feet per minute. Only about 30 men were employed. There was no legal mine-boss. They claim that they could not obtain one; probably they were not making much effort in that direction.

Primrose.—On my last visit this mine was found in pretty good condition, with the exception of several rooms in one of the entries being turned away in advance of the airway. Thirteen thousand two hundred cubic feet of air per minute was passing at the outlet. The roadways in the Midway mine, operated by the same company, are wet and muddy, in other respects the mine is in pretty good order. They have sunk a new shaft for an inlet for the air, and for an escapement way for the miners. Quantity of air passing into the mine when last measured, 18,800 feet per minute.

Mines on the Chartiers Valley Railroad.

Mansfield No. 2.—It is a very difficult matter to properly ventilate all parts of this mine with pure fresh air. The mine was opened and run for a considerable time in a hap-hazard way, which took no account of future requirements, and as a result of this, the ventilation has to be forced around the mine in one continuous current, which is a very defective method, and is injurious to the health of the workmen. The present inside manager and superintendent are not to blame for the defect, and are making strenuous efforts to overcome the difficulty, but in a large property of this kind, years of skillful management are often necessary to rectify the errors of previous bad management. The quantity of air passing in the return airway, when last measured, was 28,500 feet per minute.

Nixon.—They have sunk a new shaft for ventilation and are building a new furnace, when this is complete the health and safety of the employes will be well provided for. They will also in the future work the mine on the double-entry system, with a view of preventing the workings from being overrun with a creep, and to make provision for a more efficient distribution of the air current. Quantity of air passing at the face of the workings when last measured, 9,500 feet.

Leasdale.—At the time of my last visit there were 13,500 feet of air passing in the return airway, but its distribution to the workings was defective.

Summer Hill.—The ventilation at this mine when last visited was rather below the requirements, they were at that time making arrangements to erect a fan. A number of electric mining machines have been introduced into this mine, but they are not in operation at the present time When last measured, there were 12,600 feet of air per minute passing into the working parts of the mine.

Bower Hill.—Is in pretty good condition. A large number of clay veins are encountered in the coal bed at this mine, and on some occasions when those clay veins are passed through, a large quantity of explosive gas is generated. There is a good furnace at this mine which will produce all the ventilation required for many years to come, providing good airways are maintained. Quantity of air passing when last measured, 26,400 feet per minute.

Old Bower Hill.—Only a few men are employed at taking out pillars. The mine at the time of my last visit was poorly ventilated on account of the fire-baskets being neglected, and no legal mine-boss was employed, but these defects have since been remedied. The Bridgeville mine, operated by the same company, is in a reasonably good condition Total quantity of air in circulation when last measured was about 13,000 feet per minute.

Hastings slope.—Condition of this mine when last visited was reasonable. There were 9,000 cubic feet of air passing into the mine per minute.

Boon.—Is also in pretty good condition, with a volume of 25,970 cubic feet of air per minute passing through the workings.

Allison.—Is in good condition in all respects; all parts of the mine being well drained and well ventilated, with an air current of 12,000 feet per minute.

Enterprise.—Is not in good condition. The ventilation is defective. The second outlet is not yet provided, but the operator has promised to sink a shaft and to provide a proper ventilating apparatus forthwith. Only about fourteen miners are employed, and developments are progressing very slowly.

Mines of the P., C. & Y. R. R.

Essen.—This mine is somewhat run down as the result of previous bad management, and it will take time and skill to overcome former errors and put the mine in a satisfactory condition. Quantity of air 27,600 feet per minute.

Beadling.—The quantity of air passing through this mine when last measured was 22,000 feet per minute. On some occasions when passing the entries through clay veins, a large quantity of gas is generated, but

it generally drains away in a few days. At the time of my last visit I found that some of the men were in the habit of going to their working places before the fire-boss had made his rounds of inspection, of course this was the result of carelessness on the part of the management, and I requested them to put a stop to this dangerous practice in the future.

O. I. C.—This mine when last visited was in bad condition, the room pillars were not cut through as required, and I found that the main ventilating door was left standing open most of the time, thereby depriving the whole mine of ventilation. I instructed the mine-boss to comply with the law, by giving his attention to the above defects forthwith. Quantity of air passing, 7,000 feet per minute, and as the mine is not extensive and only employs a few miners, the above quantity of air is sufficient if properly distributed.

Powers.—The general condition of this mine is favorable. Some parts of the main return airway have been enlarged, this has reduced the friction of the air current, causing an increase in the volume of air passing through the mine. At the time of my last visit there were 37,800 cubic feet of air per minute in circulation, being reasonably well distributed to the different sections of the mine.

Federal Spring.—At the time of my last visit the ventilation was below the requirements. I requested the operator to improve the same by sinking an air shaft and erecting a furnace in a more suitable location than the one they are now using, and he promised that my request should be complied with. The amount of effective air current passing through the working parts of the mine when last measured was 5,400 feet per minute; there were 10,000 feet passing at the furnace, but most of it was leaking through the old workings and was of no benefit to the miners.

Beachmount.—Is in an average condition; they are making preparations to erect a ventilating fan, when this is done the ventilation in the mine will be good. Quantity of air passing when last measured 9,500 feet per minute, which was sufficient for the number of men then employed.

Sanford No. 2.—On my last visit I found several rooms turned away in advance of the air current, in all other respects the mine was in good condition. The quantity of air in circulation was 30,000 cubic feet per minute.

Mines of the Montours Run Railroad.

Beach Cliff.—The general condition of this mine is much better than formerly, the system of ventilation has been very much improved. The roadways are sometimes wet and muddy, but when we take into consideration the large amount of surface water they have to contend with, we can readily understand why the drainage is sometimes imperfect. The quantity of air passing when last measused was 32,900 feet, split in three divisions.

Montours.—The condition of this mine is also much improved. In the matter of drainage they have the same difficulties to contend with that are found in the Beach Cliff mine. They have sunk a new air shaft and built a large ventilating furnace which was passing 45,250 feet of air per minute, when last measured, or about 300 feet per minute for each person employed in it.

Mines West of the Allegheny River.

Pine Creek.—General condition is favorable. They have sunk a shaft for a traveling-way, which removes the liability of accident consequent upon the men passing into and from the mine by way of the main slope. The quantity of air passing into the mine when last measured was 40,000 cubic feet per minute.

Glenshaw.—The return airway was in bad condition when last visited. I requested the manager to clean up and repair the same forthwith. Quantity of air passing at face of mine, 3,700 feet. Number of employes, twenty-two.

Hites.—This mine has only been run as a country bank for several years past. Previous to the introduction of natural gas a large number of men were employed, and the output was considerable. They are at present working about forty-seven men, with reasonable prospects for the future. The mine is in reasonable good condition. Quantity of air in circulation, 7,600 feet per minute.

Natrona.—This mine was found in good condition with the exception of some of the entries being driven too far in advance of the air current. The quantity of air in circulation, 21,600 feet per minute.

Description of Fatal Accidents Occurring in and about the Mines of the Seventh Bituminous District for the year 1890.

John Steinmetz, miner, was killed by fall of roof coal and slate on April 8, in the Streets Run mine. He was taking out an entry pillar and the roof had caved in close up to the working face, and the deceased was working across the face of the coal next to the fallen roof, and he neglected to protect himself while doing so, although a man working near him had warned him of the danger and told him that he should set props to secure the roof from falling, but the man failed to heed the warning and so lost his life through his own neglect.

John D. Caterie, miner, was killed by fall of coal in the Boyd mine on March 7. This man had fired a power blast in the tight end of his room the previous evening which broke the coal but did not throw it down, and the deceased went under the broken coal with the intention of undermining it deeper, without taking any precaution to set sprags under the broken coal for safety, and while he was working undermining the broken coal his partner was also engaged in making a cut in the tight end of the

room where the shot had been fired, they had only been working in this manner for a few moments when the whole mass of coal fell with the above results; it would have been almost a miracle if one or the other had not been killed under such circumstances.

Norman J. Brown, miner, was killed by fall of slate in the Enterprise No. 2 mine, on April 24. This man was mining coal in a room and the slate which fell upon him was encircled by a slip or separation from the surrounding strata, it would appear that he saw the danger as there was evidence that he had tried to take the slate down but failed to do so, after which he went to work under it without setting props to protect himself; if this had been done the accident would not have occurred. As far as I could learn the man was not a practical miner and had only worked a short time in the mine.

Andrew Adamson, mule driver, was fatally injured with coal cars on July 18, in the Enterprise mine. The boy was driving a mule with one loaded car. There was a little down grade on the road and the boy neglected to use sprags to keep the car under control. He was riding on the front end of the car when by some means the mule became frightened and ran back against the boy throwing him under the wheels of the car which passed over his body with above result. He was only 14 years of age and should not have been permitted to drive a gathering mule for he was not old enough to protect himself from injury while engaged in this dangerous kind of work.

Frederick Lamp, miner, was killed by falling slate. This man was taking out a skip backwards, or, in other words, was taking out a room pillar with one fast end, and he was at the time of the accident taking out his back props. It would appear that he took out the prop next to the face of the pillar first and was in the act of going under the loose slate after the back props when it fell upon him with above result. Accident occurred in the Enterprise mine August 21.

John Spiker, miner boy, was killed by fall of roof coal and upper slate in the Essen mine on October 27. He was working with his father in a room pillar and skip; the boy was driving up the skip alongside of a clay vein and the father was taking coal off the pillar in the opposite direction on the same road. The roof coal and slate should have been taken down or a cross bar set to support the same. The father said that he knew of the danger, but that he had no timbers in the place in the first part of the day to secure it with, but after he did get the timber he still permitted the boy to continue to work under the dangerous roof and did not make use of the timber for his protection as he should have done.

Andrew Babinhack, laborer, was killed at the Pine Creek mine, on November 14. He was employed under the tipple placing the coal on the railroad cars outside of the mine, and the door on the weigh pan was by some means left open or forced open by the weight of the coal fall-

ing into it, and a lump of coal passed through the open door and struck the man on the head causing instant death. It is uncertain what caused the door of the weigh pan to be open, but I feel satisfied that it was forced open by the back balance weight which should have closed it. I made a test of the action of this back balance weight and found that when the door was forced open beyond the perpendicular by the action of the coal passing through it, that its action was as above described, I suggested that such alterations be made as would prevent any further mishap from this cause in the future and my suggestions were at once acted upon.

Cypiy Cantaral, miner, was killed on December 10, in the Star mine. He was taking out a room pillar and was undermining some coal to a clay vein and failed to set sprags to the coal, consequently when the coal was undermined to the clay vein it was left without support and the loose coal and slate fell upon the deceased causing his death in a few minutes afterward.

John Schmitt, miner boy, was killed by fall of horseback roof on December 30, in the Ormsby mine. The piece of roof which fell upon him would weigh about one ton and was encircled by a slip or separation from the surrounding strata. The danger could only have been detected upon a close examination. The boy was too young to work in a room by himself.

TABLE I—*Showing location of collieries in the Seventh Bituminous Mine District.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Allison.	Jonathan Allison.	Washington.	Jonathan Allison.	Washington.
Boon.	Canonsburg Coal Company.	"	E. A. Upstill.	Canonsburg.
Black Diamond.	Thomas Taylor.	"	Thomas Taylor.	Midway.
Brier Hill.	Patterson & Santers.	"	J. S. Santers.	McDonald.
Bellwood.	Munhall Brothers.	Allegheny.	John Munhall.	Munhall.
Becks Run.	H. C. Burghman, as trustee.	"	Julius Esmiol.	Redman's Mills.
Beadling.	Beadling Brothers.	"	Wm. Beadling.	Beadling.
Beach Cliff.	Imperial Coal Company.	"	Wm. Bald.	Imperial.
Bridgeville.	A. J. Shulte.	"	A. J. Shulte.	Chartiers.
Boyd.	Boyd Coal Company.	"	Jessi Sanford.	Walkers' Mills.
Boston Nos. 1 and 2.	W. H. Browns' Sons.	"	Robert Cornell.	Boston.
Beachmount.	Beachmount Coal Company.	"	J. C. McMichael.	Hickman.
Bower Hill.	Imperial Coal Company.	"	Wm. Bald.	Imperial.
Castle Shannon Nos. 1 and 2.	Castle Shannon Railroad Company.	"	John Jahn.	Castle Shannon.
Camp Hill.	David Steen.	"	David Steen.	Chartiers.
Cherry.	Heirs of Morris McCue.	"	James Boyle.	Third avenue and Try street, Pittsburgh.
Dravo.	Lake Shore Gas Coal Company.	"	C. Wisser.	Robbins, Westmoreland county.
Enterprise.	Hartley & Marshal.	"	Roger Hartley.	South Side, Pittsburgh.
Enterprise No. 2.	J. V. H. Cook.	Washington.	J. V. H. Cook.	Canonsburg.
Essen.	Sanford & Co.	Allegheny.	James Henderson.	Essen.
Fox.	Thomas Fox.	"	Thomas Fox.	Thirty-sixth ward, Pittsburgh.
Federal Spring.	E. W. Powers.	"	. . . . .	Hickman.
First Pool.	First Pool Mon. Gas Coal Company.	"	F. Robbins.	Penn building, Pittsburgh.
Fort Pit.	Fort Pitt Coal Company.	"	John E. McCrickart.	1010 Penn avenue, Pittsburgh.
Glenshaw.	Glenshaw Coal Company.	"	S. W. Spencer.	Glenshaw.
Grant.	Grant Coal Company.	"	James Matthews.	Central Hotel, Pittsburgh.
Hays Street Run Nos. 1 and 2.	H. C. Burghman, as trustee.	"	J. Watson.	Hope Church.
Hastings Slope.	Pennsylvania Coal Company (Limited).	"	W. J. Morgan.	Bridgeville.
Hites.	McFetridge Brothers.	"	George McFetridge.	Hites.
Idlewood.				
Jumbo.	Jumbo Coal and Coke Company.	Washington.	F. L. Robbins.	Penn building, Pittsburgh.
Leesdale.	Jessie H. Sanford.	Allegheny.	. . . . .	Woodville.
Laurel Hill Nos. 1 and 2.	W. P. Rend & Co.	Washington.	John Renoe.	McDonald.
Montours.	Imperial Coal Company.	Allegheny.	Wm. Bald.	Imperial.
Mansfield No. 2.	Mansfield Coal and Coke Company.	"	Daniel Boden.	Mansfield Valley.
Mansfield and Erie.	. . . . .	"	Alex. Patterson.	Chartiers.
Midway.	Midway Block Coal Company.	Washington.	T. B. Robbins.	Midway.
National.	National Coal Company.	Allegheny.	Edward Fisher.	Fourth avenue and Try street, Pittsburgh.
Nickel Plate.	J. D. Santers.	Washington.	J. D. Santers.	McDonald.
Natrona.	Pennsylvania Salt Manufacturing Co.	Allegheny.	H. W. Boyd.	Natrona.
Nixon.	Chartiers Valley Coal Company.	"	W. H. Linsley.	Joint.
Old Bower Hill.	A. J. Shulte.	"	C. P. Mayer.	Bridgeville.
Ocean Nos. 2, 4 and 5.	Youghlogheny River Coal Company.	"	John F. Hoosack.	Scott Haven, Westmoreland county.
Ormsby.	Birmingham Coal Company (Limited).	"	Joseph Keeling.	South Side, Pittsburgh.
Oak Ridge.	Oak Ridge Coal Company (Limited).	"	C. W. Schluederberg.	Oak Dale.
Pacific.	Lake Erie Gas Coal Company.	"	John F. Hoosack.	Scott Haven, Westmoreland county.
Powers.	Chartiers Block Coal Company.	"	Wm. Baldwin.	Federal.

Pine Creek,	Robbins' Coal and Coke Company,	"	F. L. Robbins,	Penn building, Pittsburgh.
Primrose,	Robbins' Block Coal Company,	Washington,	T. B. Robbins,	Midway.
Port Royal No. 2,	Port Royal Coal Company,	Westmoreland,	Isaac Brown,	Fitz Henry.
Streets Run,	Daniel W. Risher,	Allegheny	Daniel W. Risher,	Hope Church.
Summer Hill,	Frank Armstrong,	"	A. A. Hadden,	Woodville.
Star,	Francis Mankedick,	"		Sturgeon.
Sanford No. 2,	Sanford & Co.,	"	James Hendersen,	Essen.
Southwest,	Youghiogheny River Coal Company,	"	John F. Housack,	Scott Haven, Westmoreland county.
Venture,	E. N. Wildman,	"	E. N. Wildman,	503 Lewis block, Pittsburgh.
Walton,	Joseph Walton & Co.,	"	John M. Kapp,	Redman Mills.
Willow Grove,	Willow Grove Mining Company,	"	F. L. Robbins,	Penn building, Pittsburgh.
West Newton No. 2,	West Newton Coal Company,	Westmoreland,	A. W. Osborne,	West Newton.

TABLE II—*Gives the total number of tons mined and tons of coke produced in each colliery, number of days worked, number of employes, number of persons killed and injured, number of kegs of powder used, etc., in the Seventh Bituminous Mining District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES.	Location.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number horses and mules.	Number mine locomotives.	Number coke ovens.
Allison	Washington	46,000	1,000	32,000	250	45			30	1	4		4
Bower Hill	Allegheny	52,929		52,929	182	102		1	5		5		
Bellwood	"	68,736		68,720	165	181					11		
Beck's Run	"	94,705		94,136	84	248				3	12		
Beadling	"	100,000		100,000	210	153				1	6		
Beach Cliff	"	88,187		88,187	230	131			30	2	6		
Bridgeville	"	51,338		51,338	283	83					7		
Boyd	"	22,207		15,555	250	72	1				4		
Boston No. 1	"	154,536		154,536	232	305		4		5	16		
Boston No. 2	"	77,512		77,512	179	209				2	9		
Beach Mount	"	40,142		40,142	280	99		2		1	4		
Boon	Washington	37,075		37,075	197	75		1	12	1	3		
Brier Hill	"	137,028		137,028	280	188				2	10		
Black Diamond	"	44,000		44,000	241	38			24	1	3		
Castle Shannon Nos. 1 and 2	Allegheny	23,363		local trade		79					6		
Camp Hill	"	7,720		7,720	175	38				2	3		
Cherry	"	27,522		27,369	263	51		1			7		
Drave	"	41,948		41,948	218	87			50		5		
Enterprise	"	159,627		159,627	257	299	2	3	250	4	15	2	
Essen	"	51,674		51,674	1373	100	1		150	2	5		
Enterprise No. 2	Washington	11,202		11,202	280	19	1		10	1	1		
Fox	Allegheny	8,066		local trade		20				1	1		
Federal Spring	"	25,951		22,970	180	76					4		
First Pool, Mon. Gas Coal Company	"	24,439		24,439	200	55			50	2	3		
Fort Pitt	"	39,419		39,419	203	72					9		
Glenshaw	"	13,000		12,000	283	25			100		5		
Grant	"	60,253		60,253	203	105		1			16		
Hays Street Run Nos. 2 and 3	"	160,083		158,750	190	273		1		1	23		
Hastings Slope	"	26,979		26,979	230	56				1	6		

Hites	Allegheny	17,324		17,324	103	54			140		5		
Idlewood	"	17,817		17,817	175	97					7		
Jumbo	Washington	182,353		182,353	254	344		1		8	14		
Laurel Hill No. 2.*	"	60,000		60,000	250	93		1		4	6		
Laurel Hill No. 1	Allegheny	252,810	9,199	252,810	300	305		4		17	34		41
Leasdale	"	74,235		74,235	140	118				1	7		
Montours	"	91,708		91,708	250	160		3	50	2	7		
Mansfield No. 2	"	205,233	4,017	197,721	240	280		5		1	22		22
Mansfield and Erie	"	5,997		5,997	161	31		2			3		
Midway	Washington	91,347		91,347	230	149		3		2	8		
National	Allegheny	27,199		27,924	125	72				1	3		
Nixon	"	54,417		54,417	186	98		3			9		
Natrona	"	21,388			306	53			217	1	6		10
Nickel Plate	Washington	80,924		80,924	265	165		1		1	10		
Old Bower Hill	Allegheny	22,644		22,644	273	46					3		
Armsby	"	38,400		38,400	200	101	1			4	13		
Oak Ridge	"	54,900		54,900	251	86		2		1	4		
Ocean No. 2	"	188,669		188,669	261	281			250		14		
Ocean No. 4	"	75,499		75,499	174	161			105	1	10		
Ocean No. 5	"	101,686		101,686	260	155		1	105		7		
O. I. C.	"	12,500		12,500	208	35					2		
Pacific	"	82,641		82,641	215	150		2	95		8		
Penny	"	8,640		8,640	80	40					3		
Powers	"	110,231		109,000	223	174		1	240	2	10		
Pine Creek	"	93,396		93,396	295	129	1		720	2	8		
Port Royal No. 2	Westmoreland	126,197		126,197	249	143		5	1,000	2	10		
Primrose	Washington	79,516		79,516	258	159		3	6	2	6		
Streets Run.*	Allegheny	27,813		27,813		201	1			3	7		
Summer Hill	"	100,990		100,990	300	158			50		8		
South West	"	41,703		36,637	120	117			30		6		
Star	"	51,000		51,000	250	85	1				5		
Sanford No. 2	"	64,839		64,841	202	111			45		6		
Venture	"	92,000		87,000	216	170				3	9		
Walton	"	117,707		117,707	150	234				3	14		
Willow Grove	"	140,261		140,261	260	260				2	9		
West Newton	Westmoreland	62,641		62,641	250	105		2		4	4		
Totals		4,572,325	14,216	4,474,663	13,812	8,355	9	53	3,764	100	516	3	77

*Estimated.

TABLE NO. III—*Showing the number of each class of employes at each colliery in the Seventh Bituminous Mine District during the year 890.*

NAMES OF COLLIERIES.	Location.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.						Grand total inside and outside.
		Inside foremen.	Miners.	Miners' boys under 16 years of age.	All company men.	Drivers and runners.	Door boys.	Total inside.	Outside foremen.	Blacksmiths and carpenters.	Engineers and firemen.	All company men.	Superintendents bookkeepers and clerks.	Total outside.	
Allison	Washington	1	30	5	1	2	. . .	39	1	1	. . . .	3	1	6	45
Bower Hill	Allegheny	1	75	10	2	5	2	95	. . .	1	. . . .	5	1	7	102
Bellwood	"	1	130	20	2	10	. . .	163	2	2	2	11	1	18	181
Beck's Run	"	1	180	9	3	15	2	210	1	2	4	29	2	38	248
Beadling	"	1	125	5	4	5	4	144	1	1	1	4	2	9	153
Beach Cliff	"	1	95	8	3	8	1	116	. . .	2	2	10	1	15	131
Bridgeville	"	1	70	. . .	3	3	. . .	77	1	1	. . . .	3	1	6	83
Boyd	"	1	60	2	1	4	1	69	. . .	1	. . . .	2	. . .	3	72
Boston No. 1	"	1	240	20	5	14	. . .	280	1	3	4	15	2	25	305
Boston No. 2	"	1	150	12	4	8	. . .	175	1	3	2	18	1	25	200
Beechmount	"	1	80	5	1	3	. . .	90	1	1	1	5	1	9	99
Boon	Washington	1	60	4	. . . .	3	. . .	68	1	1	1	3	1	7	75
Brier Hill	"	1	150	3	10	7	2	173	1	1	3	9	1	15	188
Black Diamond	"	1	25	5	1	2	. . .	34	. . .	. . .	2	. . .	2	4	38
Castle Shannon Nos. 1 and 2	Allegheny	1	56	4	1	6	. . .	68	1	4	. . . .	5	1	11	79
Camp Hill	"	1	25	. . . .	2	3	2	33	. . .	2	1	2	. . .	5	38
Cherry	"	1	38	3	1	3	. . .	46	1	1	. . . .	2	1	5	51
Dravo	"	1	70	4	2	4	1	82	. . .	1	. . . .	3	1	5	87
Enterprise	"	4	225	16	11	11	7	274	1	4	6	11	3	25	299
Essen	"	1	75	5	2	4	1	88	1	2	2	6	1	12	100
Enterprise No. 2	Washington	1	14	. . . .	. . . .	1	. . .	16	. . .	1	1	. . . .	1	3	19
Fox	Allegheny	1	15	. . . .	. . . .	1	. . .	17	. . .	. . .	1	2	. . .	3	20
Federal Spring	"	1	60	4	2	4	. . .	71	1	1	. . . .	3	. . .	5	76
First Pool M. G. C. C.	"	1	35	4	7	3	. . .	50	. . .	1	1	3	. . .	5	55
Fort Pit	"	1	55	. . . .	1	5	. . .	62	1	3	. . . .	5	1	10	72
Glenshaw	"	1	16	2	1	2	. . .	22	. . .	. . .	. . . .	2	1	3	25
Grant	"	1	80	4	3	7	2	97	. . .	1	. . . .	6	1	8	105
Hay's Street Run Nos. 1 and 2	"	2	215	. . . .	3	19	2	241	2	3	2	23	2	32	273
Hastings slope	"	1	41	2	1	4	. . .	49	1	1	2	2	1	7	56
Hites	"	1	35	5	2	4	. . .	47	1	1	. . . .	4	1	7	54
Idlewood	"	1	75	. . . .	3	7	. . .	86	. . .	3	. . . .	8	. . .	11	97
Jumbo	Washington	1	275	20	8	15	5	324	1	3	4	10	2	20	344

Laurel Hill No. 2,*	"	1	70	1	3	4	3	82	. . .	2	3	5	1	11	93
Laurel Hill No. 1,	Allegheny,	1	200	30	12	21	6	270	1	8	8	16	2	35	305
Leasdale,	"	1	100	2	3	4	2	112	1	1	1	2	1	6	118
Montours,	"	1	125	10	3	8	. . .	147	. . .	2	2	8	1	13	160
Mansfield No. 2,	"	1	230	10	5	11	4	261	. . .	6	2	10	1	19	280
Mansfield and Erie,	"	1	23	2	. . . .	2	. . .	28	. . .	. . . .	. . . .	3	. . .	3	31
Midway,	Washington,	1	100	25	4	9	1	140	1	2	1	4	1	9	149
National,	Allegheny,	1	60	. . . .	1	4	1	67	. . .	1	1	3	. . .	5	72
Nixon,	"	1	80	. . . .	3	5	1	90	1	3	. . . .	3	1	8	98
Natrona,	"	1	28	5	5	8	1	48	1	. . . .	2	2	. . .	5	53
Nickel Plate,	Washington,	1	134	5	6	9	2	157	. . .	1	1	5	1	8	165
Old Bower Hill,	Allegheny,	1	35	. . . .	2	2	. . .	40	1	1	. . . .	3	1	6	46
Ormsby,	"	2	60	10	2	8	1	83	2	4	3	8	1	18	101
Oak Ridge,	"	1	65	4	3	4	. . .	77	. . .	2	1	5	1	9	86
Ocean No. 2,	"	1	225	20	5	12	. . .	263	1	3	. . . .	13	1	18	281
Ocean No. 4,	"	1	130	10	3	7	1	152	1	1	1	5	1	9	161
Ocean No. 5,	"	1	135	5	2	6	. . .	149	1	2	. . . .	3	. . .	6	155
O. I. C.,	"	1	30	. . . .	. . . .	1	. . .	32	. . .	1	. . . .	1	1	3	35
Pacific,	"	1	125	8	3	5	1	143	1	2	. . . .	5	. . .	7	150
Penny,	"	1	30	2	1	2	. . .	36	. . .	. . . .	. . . .	3	1	4	40
Powers,	"	2	140	10	2	6	4	164	1	2	1	6	. . .	10	174
Pine Creek,	"	1	102	5	3	6	. . .	117	1	2	1	7	1	12	129
Port Royal No. 2,	Westmoreland,	2	107	. . . .	9	7	7	132	1	. . . .	2	7	1	11	143
Primrose,	Washington,	1	100	15	3	7	1	127	1	2	1	7	1	12	139
Street's Run,*	Allegheny,	1	170	5	. . . .	7	2	185	. . .	1	2	12	1	16	201
Summer Hill,	"	1	110	6	. . . .	10	2	129	. . .	3	. . . .	5	1	9	138
Southwest,	"	1	90	10	2	5	1	109	1	1	. . . .	6	. . .	8	117
Star,	"	1	70	4	1	4	. . .	80	. . .	1	. . . .	4	. . .	5	85
Sanford No. 2,	"	1	87	8	1	5	1	103	1	1	. . .	5	1	8	111
Venture,	"	1	120	8	14	9	3	155	. . .	2	4	7	2	15	170
Walton,	"	2	180	. . . .	19	12	. . .	213	1	3	4	12	1	21	234
Willow Grove,	"	1	200	25	5	10	3	244	1	2	2	9	2	16	260
West Newton,	Westmoreland,	1	80	3	7	3	2	96	1	1	2	4	1	9	105
Totals,		73	6,416	429	222	415	82	7,637	43	114	87	412	62	718	8,355

* Estimated.

TABLE IV—*List of Fatal Accidents occurring in the mines of the Seventh Bituminous District for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Widow.	Number of orphans.	Name of colliery.	Location - County.	Nature and cause of accident.
Mar. 7.	John D. Caterie, . .	Miner, ...	31	Yes,	2	Boyd, ...	Allegheny, ...	Killed by fall of coal.
April 8.	John Steinmetz, . .	"	23	No,	. . .	Streets Run, ...	"	Killed by fall of roof coal and slate.
" 24.	Norman J. Brown, . .	"	. .	Yes,	2	Enterprise No. 2, . .	Washington, ...	Killed by fall of slate.
July 18.	Andrew Adamson, . .	Mule driver, . .	14	. . .	. . .	Enterprise, ...	Allegheny, ...	Fatally injured by a coal car; died two days after accident.
Aug. 21.	Frederick Lamp, . .	Miner, ...	18	No,	. . .	"	"	Killed by falling slate.
Oct. 29.	John Spiker, ...	Miner boy, . . .	15	. . .	. . .	Essen, ...	"	Killed by fall of roof coal and slate.
Nov. 14.	Andrew Babinhack,	Laborer, . . .	23	No,	. . .	Pine Creek, ...	"	Killed under tipple outside of mine.
Dec. 10.	Gypiy Cantaral, . .	Miner, ...	. .	Yes,	1	Star, ...	"	Killed by a fall of coal and slate.
" 30.	John Smith, ...	Miner boy, . .	16	. . .	. . .	Ormsby, ...	"	Killed by fall of horseback roof.

TABLE V—*List of Non-Fatal Accidents occurring in and about the Mines of the Seventh Bituminous Mine District for the year ended December 31, 1890.*

Date of accident.	Name of Person.	Occupation.	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 3.	James Mitchell.	Miner.	24	No.	Boston No. 1.	Allegheny.	Leg broken by a fall of slate and coal.
10.	Adam Lang.	"	26	"	"	"	Leg broken by coal cars.
16.	David Towens.	"	17	"	Midway.	Washington.	Burned by explosion of fire-damp.
16.	Major Anderson.	"	19	"	"	"	Burned by explosion of fire-damp.
28.	John Lloyd.	"	18	"	Cherry.	Allegheny.	Two ribs broken and foot crushed by falling slate.
Feb. 13.	Edward Ball.	Mule driver.	15	. . .	Enterprise.	"	Arm broken by coal cars.
14.	Wm. Peters.	Miner boy.	14	. . .	Mansfield No. 2.	"	Leg broken by fall of slate.
14.	Owen Duffey.	Miner.	23	No.	"	"	Injured by fall of coal.
28.	John Burk.	"	20	"	Laurel Hill No. 1.	"	Head injured by fall of slate.
14.	Nathan Bland.	"	55	. . .	"	"	Arm broken by fall of slate.
Mar. 5.	C. Fuller.	"	32	Yes.	"	"	Slightly injured by fall of slate.
7.	John Wilds.	Mule driver.	23	"	Hays Streets Run No. 2.	"	Leg injured by coal cars.
10.	Chas. Schmitt.	Miner.	40	No.	Oak Ridge.	"	Slightly injured by coal cars.
18.	John McCann.	"	54	Yes.	Mansfield No. 2.	"	Leg broken by falling slate.
26.	Alexandra Patrick.	"	45	Yes.	Pacific.	"	Seriously injured by a fall of slate.
Apr. 8.	D. Hamilton.	Miner boy.	12	. . .	"	"	Leg broken by a fall of slate.
14.	Chas. Arnold.	Miner.	19	. . .	Montours.	"	Back injured by fall of slate.
15.	Harry Shanks.	"	19	. . .	Boston No. 1.	"	Injured by falling slate.
21.	Baptist Feranli.	"	17	. . .	Powers.	"	Slightly injured by explosion of powder.
28.	David Davis.	Mule driver.	35	. . .	Port Royal No. 2.	Westmoreland.	Leg broken by coal cars.
May —.	Michael Curry.	"	47	Yes.	Boston No. 1.	Allegheny.	Arm broken by coal cars.
19.	Leon Colas.	Miner.	28	"	Midway.	Washington.	Fore finger severed by falling slate.
31.	Wm. Lepro.	"	36	. . .	Primrose.	"	Foot injured by fall of slate.
June 7.	Chas. Jordan.	"	36	. . .	"	"	Back slightly injured by falling slate.
19.	Goramus Yonco.	"	33	No.	Mansfield and Erie.	Allegheny.	Injured by fall of slate.
20.	John W. Morris.	"	57	Yes.	Mansfield No. 2.	"	Injured by coal cars while riding on full trip.
July 16.	August Charlie.	"	45	"	Montours.	"	Hand injured by fall of slate.
21.	John Underwood.	"	37	. . .	Enterprise.	"	Injured by a fall of slate.
Aug. 4.	Stephen Vores.	"	27	Yes.	Bower Hill.	"	Collar bone broken and otherwise injured by fall of slate.
15.	Thomas Brown.	"	40	"	Nixon.	"	Slightly injured by a fall of slate.
25.	John Courtland.	"	60	"	Montours.	"	Collar bone broken and otherwise injured by falling slate.
27.	Richard Bell.	Miner boy.	15	. . .	Oak Ridge.	"	Leg fractured by fall of slate.
29.	Edward Rowland.	Driver.	29	Yes.	West Newton.	Westmoreland.	Leg injured by coal cars.
29.	Joseph Leskavyansky.	Miner.	33	No.	Laurel Hill No. 1.	Allegheny.	Leg broken by a fall of slate.
30.	Wm. Ankle.	"	26	Yes.	Nixon.	"	Slightly hurt by fall of slate.
Sept. 11.	Anton Androuskie.	Laborer.	35	No.	Laurel Hill No. 2.	Washington.	Leg broken by the hoisting cage on top of the shaft.
30.	Daniel Harris.	Miner.	32	Yes.	Port Royal No. 2.	Westmoreland.	Leg broken by a fall of slate.
Oct. 7.	John Kogler.	"	35	. . .	West Newton.	"	Leg broken by falling slate.

TABLE V—*Continued.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident.
Oct. 14.	Thomas Williamson.	Miner.	40	Yes.	Grant.	Allegheny.	Slightly injured by a fall of slate.
15.	Owen Nelson.		20	No.	Mansfield No. 2.	"	Shoulder bone broken while riding on full trip of cars.
24.	Robert Morrow.	Miner.	53	Yes.	Jumbo.	Washington.	Three ribs broken by a fall of slate.
30.	Thomas Miller.	"			Port Royal No. 2.	Westmoreland.	
30.	Andrew Griffen.	"			" "	"	Burned by fire damp; not seriously injured.
30.	John Calto.	"			" "	"	
31.	Peter Tassay.	"	61	Yes.	Nickel Plate.	Washington.	Leg broken by a fall of slate.
Nov. 8.	James Rowley.	"	33	"	Enterprise.	Allegheny.	Slightly injured by a fall of slate.
22.	John Devenport.	"	51	"	Ocean No. 5.	"	Back injured by a fall of coal and slate.
Dec. 1.	S. Batey.	"	19	No.	Nixon.	"	Ankle dislocated by a fall of slate.
9.	Richard Young.	"	50	"	Boon.	Washington.	Back injured by a fall of coal and slate.
15.	Han Canary.	Mule driver.	28	"	Beachmount.	Allegheny.	Slightly injured by coal cars.
17.	Henry Porter.	"	21	"	Primrose.	Washington	Fracture of collar bone; caused by coal cars.
24.	Wm. Hoffman.	"	19		Mansfield and Erie.	Allegheny.	Ankle dislocated by coal cars.
26.	John McDugal.	Miner.	35	No.	Beachmount.	"	Leg broken by a fall of slate.

Historical Sketch of Coal Mines and Mining Operations in Allegheny County, Pennsylvania.

By Selwyn M. Taylor, *Mining Engineer*,

That portion of Allegheny county lying south of the Ohio and Allegheny rivers is practically one coal field of the Pittsburgh bed.

That part of the county lying north of the rivers is too low, or rather the rise of the measures to the north has carried the coal out of the hills.

That part of the county, however, as well as the southern part, is solidly underlaid by the "Freeport bed," which, on the failure of the gas supply, may become an important feature of the coal production of the county in the near future.

That part of Allegheny county between the Allegheny river on the north and the Monongahela and Youghiogheny rivers on the south and east, originally had a coal area equal to about one-fourth of its entire extent, the larger part of which has been mined. This field, or portion of the field, consisted principally of small bodies of coal lying high in the hills with an overlying strata seldom more than one hundred feet in thickness and averaging perhaps sixty feet. A number of these detached bodies lay in what is now the city of Pittsburgh, those in the city limits, however, are nearly all exhausted.

The principal operations in the field north of the Pennsylvania railroad have been those of the New York and Cleveland Gas Coal Company. The territory through which its operations extend has been quite a large one, and the systematic manner in which its coal has been mined has been remarkable as compared with other operations under similar conditions. That part of this field lying between the Pennsylvania railroad on the north and the Monongahela river on the south was quite a small one and has been practically all mined out by two companies; W. H. Brown & Co., from the river front, and one mine on the Pennsylvania railroad near Wilmerding station.

That part of Allegheny county south of the Ohio river and north of the Pittsburgh, Cincinnati, Chicago and St. Louis railroad has from one-third to one-half of its area underlaid with the Pittsburgh coal bed.

The principal operations in this field are from the Montour's Run railroad mines, and two or three mines on the Pittsburgh, Cincinnati, Chicago and St. Louis railroad. This coal also lies high in the hills with light overlying strata, this is practically yet a solid field, the coal that has heretofore been mined comprising but a small portion of the whole.

That part of the county lying between the Monongahela and Youghiogheny rivers was almost entirely underlaid with coal, about one-third of which has been mined. This field generally lies from one hundred to two hundred feet above the river, but the hills rising abruptly back

from the river has given it a thick overlying strata. This field is at present the seat of the principal operations of W. H. Brown's Sons, Horner & Roberts, and a number of small operators shipping their coal by river, and of W. L. Scott who ships by rail.

This field has been, and will probably continue to be, one of the most valuable in the district owing to its natural advantages both for mining and shipping of coal.

The remaining part of the county lying south of the Monongahela river and the P., C., C. & St. L. railroad, which comprises one-half of the county, is underlaid with the Pittsburgh bed of coal, substantially throughout its entire area, with outcroppings on river and railroad of nearly one hundred miles. This field has its outcrop always at a sufficient height above the river and railroad to make it convenient for operating.

The mining and shipping of coal has always been divided into two methods—that of shipping by rail, and that by river, but the river operations are by far the elder, as they date back some sixty or seventy years.

The mines on the river are classed in what is known as "First," "Second" and "Third" pools—that is, all lying below Lock No. 2 on the Monongahela river are in the First pool, and those above, and on that part of the Youghiogheny that is navigable, as the Second pool, and all lying between Locks Nos. 3 and 4, the Third pool. The front hills, as they are usually termed, meaning those adjacent to the river, are very high and bluff, the coal outcropping near the tops of them. In these hills the first mining operations were conducted, and, indeed, it is only within the present decade that the operations have been extended into the second range of hills.

Mines in the First pool now in operation are those of Keeling, Walton, Castle Shannon, Hays' estate, Rishers and Munhalls. Nearly all of these mines are old ones, and their operations are being conducted at from two to four miles from the river front, the coal being hauled either by locomotive or wire rope. These mines still have a large and almost unlimited field of coal back of them, and they will be enabled to continue in operation for many years to come.

The mines in the second pool on the west side of the Monongahela river, have not nearly the quantity of coal back of them that those in the first pool have; many of them are already worked out, their field of coal being cut off by the "creek outcroppings," a short distance back from the river.

The mines which are known as railroad mines are mostly located on the P., C., C. & St. L. R. R., several are on the Wheeling division of the B. & O. R. R., the New York and Cleveland Coal Company's on the Allegheny Valley, Pennsylvania and Montour Run railroads, and W. L. Scott's mines on the P., McK. & Y. and the P., C. & Y. R. R.'s. Nearly all of these mines, with the exception of those located on the P. R. R. and Allegheny Valley railroads have an unlimited coal area to draw from.

Of the early mining operations in Allegheny county but little of good can be said, as the coal lies high in the hills with outcroppings on every side, natural drainage was almost always to be had, and the coal having to be hauled but a very short distance to the pit mouth, the need for seientific or economical mining was not felt. The sale of the coal always yielded a large profit, no matter how much it cost to mine it. During these early operations, disputes between the operator and miner in regard to the wages to be paid were constantly occurring, but there was seldom any effort made to economize in any other direction.

The mines were all worked on the single-entry system and usually with only a single main entry, and air-courses were even driven as far apart as possible, three or four hundred yards sometimes intervening between them. No care was taken in the driving of rooms as to the width of the room or the thickness of the pillar.

Entries were seldom driven straight and the entry pillars were left as small as possible. No one ever dreamed of making a "cut through" from one room to another and ventilation in ninety per cent. of the mines was "natural" exclusively.

The supply of timber to the miner was limited, through a false notion of economy, in consequence of which, large bodies of coal were lost in almost every mine, for the loss of five or ten acres of coal that perhaps had cost the operator, when developed, from six to eight hundred dollars per acre, did not trouble the superintendent or pit-boss at all, and rather than put in a pump or a limestone drain, ten or fifteen acres of coal would be abandoned forever, and the advice of a mining engineer was seldom asked, for the certainty that if the entries were driven far enough they would come to daylight was deemed sufficient.

Fire-damp was seldom met with and never in dangerous quantities, and if occasionally the mine-boss would decide to drive an entry to hit a certain point or an air-course sometimes he would do it by "sound" (mostly bad), guessing and sometimes he would call in a surveyor.

Occasionally an operator, curious to know how much coal he had remaining unmined, would employ a surveyor and have a map made, and such a map! Often the entries only would be shown and sometimes the rooms would be indicated by a straight dotted line at right angles with the entry with the distances indicated in rods; and the mining out of other people's coal was the rule rather than the exception, for sometimes the coal from an entire tract would be taken without the owner's knowledge or consent.

Accidents were frequent, not from machinery or explosive gas, but from falls of coal, etc., and from narrow entries.

No business could have been more chaotic than that of mining coal in Allegheny county fifteen years ago. The average output of the mines of the district was probably about five thousand bushels a day for each

mine, or about two hundred tons. There were from thirty to fifty cents per ton for expenses, outside of that for mining, and yet the margin was large enough to make the business immensely profitable.

It would be difficult to trace each step that has been taken towards improvement, but the greatest of them probably dates from the taking effect of the Bituminous mine act of 1887, the operators being compelled by the provisions of that act to introduce some sort of ventilation into their mines, following this, the increased product consequent upon numbers of new mines being opened and the increased competition where before there had been none, tended to set the operators to thinking how their coal could be handled more economically outside of the cost of the actual mining, and wire rope haulage was rapidly introduced until now few mines that have been worked for many years are operated without it.

The "double-entry" system came next, and what a hard task it was to persuade the operators and mine-bosses that it was not going to be twice as expensive as the old single-entry air-course system was, without any advantages over it, but it was accomplished, and is now in almost universal use. Next came "fan ventilation" and the scrupulous mining of every ton of coal that was contained in an acre.

It was the prevailing idea among coal men, that the average quantity of merchantable lump coal to the acre was 80,000 bushels, the writer well remembers an occasion when a number of reputable operators and superintendents testified that not more than 90,000 bushels to the acre could be taken out, which was very probably true at that time, but now in our best mines the yield per acre is from 110,000 to 116,000 bushels, and in some cases as great as 120,000 bushels of lump coal over an inch and a half screen. In one year's work, in a large mine, the writer estimated that not more than one per cent. of coal remained unmined, a result hardly obtainable in any other vein of coal in the world.

The mining act of 1885 was certainly a great benefit to the operator as well as to the miner, as it started the weeding out of the old and ignorant class that had ruled the mines for so many years; how much the operator of this district left to the mine-boss, for the operator seldom having any knowledge of practical mining himself, he felt that the mine-boss who had been in his employ for so many years, and had never yet failed to get out the few thousands of bushels of coal that was expected to be produced, knew all about it and must be of course a first-class mining man, no matter how grossly ignorant he seemed to be, but the "certified mine-boss" system has to a certain extent done away with this class and it has also led to reading, study and inquiry by many of the miners who aspire to the position of mine-boss or fire-boss and consequently to the general promulgation of mining information amongst the miners and others connected with the mining of coal.

The present condition of the mines and mining in Allegheny county may be summed up as follows.

First. As to their sanitary condition, fifteen years ago, perhaps 80 per cent. of them were very poorly ventilated, now 80 per cent. are well ventilated and the drainage has also been greatly improved, and the Allegheny county mines, as regards the health and safety of the miners, are above the average.

The principal cause of accidents is from falls of roof, no marked decrease in such accidents is apparent, this is a matter which now lies almost entirely with the miner himself, for the operator furnishes him with an unlimited supply of timber but he does not use it.

Second. As to the production of coal in large quantities by the mines, there are at present about eighty mines in the county shipping coal either by river or rail, of these about half have wire rope haulage plants in operation and coal is being produced and hauled in some cases several miles under ground at from five to twenty-five cents per ton, exclusive of the price of mining, and it is often produced the cheapest where the longest haul is necessary, and haulage has been reduced to a minimum in probably fifty per cent. of the mines, in many of the mines in the county, however, it is crude and expensive.

Third. Improvements in the mining of coal. While the system of entries has been exchanged from the single to the double, yet the old system of room and pillar which has always been in use in this district has undergone no change nor has anyone attempted to make what might be called an improvement on it, the rooms are usually twenty-one feet wide and ribs twelve or thirteen feet thick, the coal is all taken out, but what a fortune in timber is buried each year in our mines; occasionally some person who has a mine in leased coal and has no conscience as to the quantity of coal that is destroyed, tries driving rooms with the road in the center, "gobbing" both sides and burying the rib, this is not often done however.

No reliable experiment has ever been tried, to the writer's knowledge, to operate by any of the systems of "Long wall," or to introduce any system which would economize in the timber supplies that are now wasted.

While the improvements noted have been the rule yet there are quite a number of operators who are living and endeavoring to grow rich under the old order of things and they will only reform when the heavy hand of the law compels them to use first-class appliances which will necessarily call for the employment of first-class men.

EIGHTH BITUMINOUS DISTRICT.

(BEDFORD, CENTRE, CLEARFIELD AND HUNTINGDON COUNTIES.)

Hon. THOS. J. STEWART, *Secretary of Internal Affairs:*

SIR: In conformity with the law I have the honor of submitting herewith my second annual report as Inspector of mines for the Eighth Bituminous coal district of Pennsylvania.

I am very sorry to report a very large increase in the number of fatal and non-fatal accidents. (The increase is about 100 per cent.) The fatal accidents number twenty-four and the non-fatal eighty-five. Two-thirds of the fatal accidents were due to the lack of ordinary caution and vigilance on the part of the victims themselves, there being nineteen of the deaths caused by falls of roof and coal. A large number of the non-fatal accidents were due to carelessness; about fifty of the eighty-five were due to this cause. I have labored constantly to reduce the number of accidents to a mininum, but apparently without meeting much success. On January 6 the following circular was issued from this office to the different mine-bosses and superintendents in charge of mine-bosses in the district with a view of securing their co-operation in this respect:

To Superintendents and Mine-Bosses of the Eighth Bituminous District:

Believing that it is your desire and to your interest—as well as your duty—to co-operate with me in attempting to reduce the possibility of accidents to a minimum, and to bring about a good sanitary condition of the mines in your charge, I make a few suggestions which I trust will be acted upon and put into effect as early as possible.

First. That mine-bosses insist on miners everywhere using sprags while undermining coal, and that all props or other timber be set in a workmanlike manner, thus combining safety to the miner and economy to the operator.

Second. That places of refuge be made on all roads where coal is hauled and men have to travel, and where those places are made that they be kept whitewashed so that a person may see the same with a dim light if need be.

Third. That a record be kept at the mine, in a book for that purpose, of all air measurements made as required by the statute and such others as the mine-boss deems necessary to make or record. The above record should be entered in a book not less than 5x7 and 220 pages, and said book should be the property of the mine owner, in order that the record be continuous, whether mine-bosses be changed or not.

Fourth. That where furnace ventilation is used, a departure should be made in the direction of deep furnace shafts, the same to be of ample area, instead of the shallow, almost useless, and wasteful furnace shafts in present use in nearly 90 per cent. of the mines ventilated by that means in this district. I would respectfully invite your attention particularly to this matter, and figure out for yourselves the great loss due to shallow furnace shafts as against deep ones, other things being equal. So great is this loss that I do not hesitate to say that—where a furnace shaft is necessary—if the mine-boss would intelligently show the operator the cost of coal burned in a shallow as against a deep furnace shaft, he would undoubtedly sink a deep furnace shaft or erect a ventilating fan.

I hope that all will see the necessity of putting the above suggestions into practice, as they are not only required by law, but are also in harmony with good mining practice.

AUSTIN KING,
Inspector of Eighth Bituminous District.

HOUTZDALE, PA., *January 6, 1890.*

The number of accidents, however, continued to increase, and in July a second circular was sent to the mine bosses of the district, as follows:

OFFICE OF MINE INSPECTOR,
EIGHTH BITUMINOUS DISTRICT.
HOUTZDALE, PA., *July, 1890.*

To . . . . . , Mine Boss of . . . . . mine, in . . . . . county:

The alarming increase of fatal and non-fatal accidents (and especially the former) in this district, makes it my duty to once more call your attention to the necessity of a more rigid enforcement of the rules and laws governing you and all other persons employed in and about the mines. The time has arrived when an order given by you with respect to spragging coal, properly posting or timbering working places, hauling or traveling roads, or any order to protect the lives and health of persons under your charge, must be strictly enforced and carried out. It is not enough to have given the orders, you should see that they are obeyed, or you will be, in a measure, criminally responsible for any accident that may occur from the failure to have it enforced. In order to bring about such an obedience you should personally visit and examine the working places as often as is possible (say once daily when at work, especially places having a dangerous or treacherous roof). I

say personally, for a mine-boss cannot delegate the performance of his duty to another when able to perform said duty himself. Commonwealth *v.* Reynolds, 1 Kulp, 218. After satisfying yourself that a person in your employ or under your charge is wilfully negligent of his own safety or the safety of miners who may be employed with him, you are morally and legally bound to discharge him and should not re-employ him until you are fully satisfied that he will use greater care for his own safety in the future.

In a short time the *revised* general and special rules, printed in six languages, can be had of R. A. Kinsloe, Philipsburg, Centre county, Pa. In them there are several important changes, and we trust you will give them close attention in order to become familiar with their requirements, and by doing as above suggested reduce the possibility of accident to a minimum.

AUSTIN KING,
Inspector for Eighth Bituminous District of Pennsylvania.

The fatal accidents were caused as follows:

	Number.	Per cent.
Falls of coal,	9	37.5
Falls of roof,	10	41.6
By mine cars,	2	8.4
Suffocated by steam,	1	Other causes, 12.5
By fall of mule,	1	
By explosion of dynamite caps,	1	
Total,	24	100.0

The non-fatal accidents were caused as follows:

	Number.	Per cent.
Falls of coal,	29	34.0
Falls of roof,	22	26.0
Mine wagons,	25	29.4
Kicked by mules,	4	Other causes, 10.6
Drilling out dynamite shot,	2	
Burnt by powder,	1	
Struck by "T" rail,	1	
Coupling railroad car,	1	
Total,	85	100.0

It will be seen by the above figures that falls of coal and roof are the chief causes of fatal and non-fatal accidents. Making 79.1 per cent. of the former and 60 per cent. of the latter class of accidents. The large number of injuries from mine cars is principally due to the practice of drivers riding between them. This is not necessary if ample room is provided on roads to pass trips, put on or take off brakes, or put in or take out sprags where the grade requires it. The revised rules require

the mine bosses to see that this is done, and it is hoped that the number of accidents from this cause will be materially diminished. During the past year every effort was made by us to have miners "sprag" the coal while undermining it, and though a great many miners neglect to do so (a number of the mine bosses make no effort to enforce this rule) still the figures given above show a slight per cent. improvement over last year.

The revised rules before mentioned were principally made necessary because no provisions had been made in the old rules for slopes or shafts, hence hoisting engineers, top hand and cagers had no rules for their guidance; again, a rule compelling miners to sprag the coal while it was being undercut by them was very necessary, because of the very large number of accidents by falls of coal; also one to prevent mine-bosses from turning off rooms between face of headings and last cut-through, or air-hole. Several other reasons could be given but these will suffice. They were printed in six languages, English, French, German, Swedish, Slavish and Polish. Something should be done to enforce obedience to rules intended to govern employes in and about mines. A penalty varying from five to twenty-five dollars, fine and costs, according to the nature of the offense, should be imposed for small offenses. This would bring about better discipline in mines, then rules prescribed for the safety of the workmen would be regarded in a different light and would effect the purposes for which they were intended.

There is no fire-damp in this district that is discernable or that has ever been detected. This is the chief reasons why the means of producing ventilation are usually too small and weak to accomplish the work they are expected to do. Some very good authorities have stated that in their opinion "fire-damp in mines was a blessing in disguise." This will almost be admitted to be true if a little thought is given to the great attention and study that has been given the subject of ventilation of mines by many eminent mining engineers in the past century, and especially in the last fifty years, which would not have been given but for the occurrence of explosions so frequently as to compel such attention both from a humane and business standpoint—a large number of the mines taking fire from the explosions.

It is generally found much harder work to convince managers of the bad or unhealthy condition of the ventilation in their mines ,where fire-damp is not given off, than where it is as its presence usually creates a wholesome fear of possible results if ventilation is not ample in quantity and properly conducted to working places. Mines should be well ventilated because, to be healthy, we must have pure air to breathe.

Operators of mines are not men who care to be classed as altogether void of the milk of human kindness, many of them would give liberally to a workman or his family in necessity, but at the same time would not think it a violation of the decalogue to have his mine so poorly ventil-

lated that men could not be seen by each other six feet apart and would raise quite a storm about the ears of the mine-boss, if the cost of lumber, erection of brattices or doors, or yardage of air-courses was greater than perhaps during some short period, when little or none of that work had been done, because some mining-boss probably made an effort to build a reputation for cheap coal, at the expense and comfort of the miners in the advance workings of the mine, and, having a certificate to that effect in the form of a letter of recommendation from the operators, would leave for other fields to wear his laurels as a cheap coal producer, while the new incumbent was being soundly drubbed because of his extravagance (compared with his predecessor), while he is endeavoring to set things right. Conditions such as these have been observed in this district and the reasons given are nearly correct in the majority of cases. A more humane spirit should be developed and encouraged, with a standing order to mining-bosses something like this, "take no *risks* where life and limb are likely to be endangered and keep the working places of the mine *well ventilated*."

The conditions of the mines are not as good on the whole as I would like to see them. About twenty-nine per cent. of them only can be said to be in good condition, thirty-six per cent. were in part poorly ventilated, these are generally classed as fair, and about thirty-five per cent. are in bad condition. Seventy-two legal notices were served on parties who operated or had charge of mines, where the conditions did not comply with the statute, besides a great many informal communications on the same subject. Some parties cheerfully and quickly put their mines in order when notified; others demurred considerably and talked of expenses, competition, etc., while others promised to do everything and did nothing.

The improvements made and noted during the year were thirteen air shafts, thirteen furnaces, and one sixteen-foot fan erected, an electrical pumping plant, and a rope hauling plant.

The capacity of the mines is shown by the following table:

Number of mines exceeding	200,000	tons	and less than	260,000,	. .	4
" "	140,000	"	"	200,000,	. .	5
" "	120,000	"	"	140,000,	. .	8
" "	100,000	"	"	120,000,	. .	5
" "	80,000	"	"	100,000,	. .	6
" "	60,000	"	"	80,000,	. .	16
" "	40,000	"	"	60,000,	. .	11
" "	20,000	"	"	40,000,	. .	21
" "	10,000	"	"	20,000,	. .	20
Less than,				10,000,	. .	22
Total,						118

The coal business is increasing rapidly in the district as seen from a comparison of the output of 1889 and 1890. The mines on the Tyrone

and Clearfield railroad are falling behind in the percentage of total output in the district. The mines on the Beech Creek railroad increased their shipments more than 550,000 tons during 1890. The Broad Top mines increased the output about 200,000 tons, while mines on the P. & E. R. R., increased their shipments about 60,000 tons over 1889. Thus leaving the increased output of the mines on the T. & C. R. R. less than 200,000 tons, or less than increase of output of Broad Top region.

The prospects for the future look much brighter for the Beech Creek region, the fields are newer and comparatively untouched, then the car service is much better, and individual operators claim to receive better treatment than is given by the Pennsylvania railroad. Several new mines are being opened up along the line of road, that are promising. No thick seams are met with, but those that are found can be worked with a profit under the system of work prevailing. On the T. & C. R. R., seven new mines are now opened up and will be ready for shipment in a short time. In five of them the coal is low, not averaging more than two feet eight inches in thickness. It is claimed by some that the Moshannon vein underlies a large territory in the southern portion of the country. It may be true, and if so it is of immense value to the owners and the community at large, but quite a number doubt it, however, some parties are drilling to prove the territory and settle the matter once for all.

During the last summer quite a stir was made in Clearfield county, by the efforts of the citizens of Houtzdale, to put down a shaft in the borough to develop the lower veins. A large quantity of water was encountered in sinking it, about 1,000 gallons per minute, and it was sunk to the "B" seam, which proved to be divided by a band of slaty fireclay about eight inches thick. The "C" seam showed three feet two inches thick. For some reason the shaft was allowed to fill up with water and remains so. The prospect for increased coal production is very bright in the Broad Top coal region, and increased nearly thirty-three per cent. in shipments in 1890 over 1889, which speaks volumes for renewed activity in the coal business in that region. Besides four new openings are now being made, all of which will have a large capacity.

The following figures are compiled from the various tables and are thus presented in order to be of easy reference:

ABSTRACT OF MINING STATISTICS.

Tons coal net produced in 1890,	6,532,736
Tons coal net produced in 1889,	5,373,676
Increase in 1890,	1,159,060
Tons coal shipped in 1890,	6,142,341
Tons coal shipped in 1889,	5,215,946
Increase in 1890,	926,395

Number of coke ovens in district,	693
Number of coke ovens fired during 1890,	514
Number of coke ovens idle during 1890,	179
Tons coke produced in 1890,	223,796
Tons coke produced in 1889,	114,078
Increase in 1890,	109,718
Number of mines in district,	122
Number of mines operated in district,	118
Number of mines opened during year,	11
Number of mines abandoned during year,	5
Number of miners employed,	6,665
Number of miners' boys employed,	832
Number of persons employed in mines,	8,485
Number of persons outside,	736
Number of persons employed inside and outside,	9,221
Number of fatal accidents,	24
Number of non-fatal accidents,	85
Number of widows left by fatal accidents,	16
Number of orphans left by fatal accidents,	36
Number of persons employed per life lost,	384
Number of persons employed per person injured,	108
Number of net tons produced per fatal accident,	272,197
Number of net tons produced per non-fatal accident,	76,855
Number of mules,	951
Number of kegs of powder reported used,	30,864
Number of steam boilers used,	69
Number of locomotives,	4
Number of stationary engines,	26
Number of dynamos and motors,	4
Total number of days worked by 118 mines,	23,669
Average number of days worked by each mine,	200
Average number gross tons produced per miner,	812
Average number gross tons produced per miner per day,	4
Average yearly earnings per miner,	$406 00
Average monthly earnings per miner,	33 83
Average daily earnings per miner,	2 03

There are 118 mines in the district that employed ten or more persons inside at some time during the year thus being within the provisions of the law. There are employed ninety-nine regularly certified mine-bosses in charge of the mines above mentioned. The difference between the number of mines and mine-bosses is due, partly to the difficulty of distinguishing, satisfactorily to all concerned, between one

coal mine and two coal mines or what constitutes one or the other (and the conditions being different at each disputed place it would require a legal decision in each case) and partly because some of the mines have been exhausted and abandoned.

The Alder Run, Hudson, Lender and Pine Run mines were not operated during the year.

A list of persons who had received certificates of competency in this district since 1885 was published in my last report for 1889 The certificates of the first three examinations were marked "second grade." No injury to personal standing or reputation was intended. Far from it. It was published to prevent innocent people from being imposed upon and to prevent wholesale destruction of life and property. Some honest men who hold the same kind of certificates had the candor to admit to me that they never saw fire-damp, would not know it if they did see it, and practically knew nothing about it. Yet some men with this very limited knowledge, but of the most unscrupulous character would, if permitted, take charge of "fiery" mines which they were as unfit to handle safely as the Hun who landed yesterday. I do not wish to convey the idea that none of the men who passed the above mentioned examinations understood anything about fire-damp and fiery mines, there were a few but they were men of years who got their experience elsewhere in "gassy mines."

Accompanying this report is the verdict of a coroner's jury in the case of the death of Jeremiah Madden (the only case of death out of 24, that was made the subject of a coroner's inquest). A list of injuries caused by non-fatal accidents and a list of mines and the certified mining bosses in charge of them. Also a photograph of the top of Mt. Vernon No. 6 colliery located near Houtzdale.

Respectfully submitted,

AUSTIN KING,

Inspector of Mines for Eighth Bituminous District.

MINES OF HOUTZDALE AND VICINITY.

Alexander.—This mine was well ventilated when first inspected, but the main road was very sloppy and wet. When next inspected ventilation was very deficient and the doors improperly hung. Last inspection showed the mine to be well ventilated but drainage on main heading very faulty.

Ashland.—The ventilation and drainage in this mine was found to be in poor condition. The operator was notified of the matter and on next visit I found the mine in good condition. He had increased the height

of the stack and improved the furnace and brattices. On subsequent visits found the mine idle.

Atlantic No. 1.—The ventilation of this mine was very faulty at first visit, but not so much so on second inspection. The drainage on both occasions was fair. The succeeding inspections found the headings well ventilated and drained, except Gilroy's heading and rooms off it, which were too smoky at time of last inspection.

Atlantic No. 2.—Was always found in good condition.

Bellevernon.—The name of this mine was Mt. Vernon No. 1, the U. C. Co.'s lease of this mine expired about August 1, and they gave it up. It has been operated since by H. K. Myers. The mine was neither satisfactorily ventilated or drained by the old company and it is to be hoped this will not be the case with the new one.

Bessemer.—Was worked with nine persons for the first half of the year. When inspected the ventilation was very bad. There was no room to drive a parallel air-course or heading, the main heading being worked on a small piece of coal that formerly was the boundary between two coal mines. They now have reached a point where hereafter ventilation can be carried forward. The drainage on the main road was very bad, but a traveling way was provided for the men.

Champion.—This mine was found very deficient in ventilation and drainage at each inspection, and only one mining-boss was employed for this and Newcastle mine. The operator was notified to employ a boss for each mine, but he refused to do so, claiming that they only constituted one mine. The District attorney was consulted and promised to bring the matter before the court but did not.

Columbia No. 3.—This mine was in good condition every time it was inspected.

Chester.—This is a new mine opened on Banian Run, some two miles from Banian Junction. The vein is supposed to be the Moshannon vein, but lower than usual, and very pure. It was opened by the Moshannon Vein Mining Company.

Eureka No. 2.—This mine was deficient in ventilation in some portion of the mine each time it was inspected. The drainage on the roads was very poor also.

Eureka No. 5.—During the early part of the year the ventilation of this mine was in fair condition, but during the summer months the ventilation became very deficient and the mine atmosphere heavily laden with smoke and vapors. The quantity of ventilation at inlet and outlet was ample but it was not carried forward to faces of working places. The proper parties were notified to remedy these defects and last inspection showed a considerable improvement in ventilation and drainage, but still far from the legal requirements.

Eureka No. 6.—Was fairly ventilated when inspected but the drainage was simply wretched.

Eureka No. 8.—When first inspected was found in good condition, but a later inspection showed the upper headings on both sides of main heading to be poorly ventilated. Some instructions were given to remedy the defect.

Eureka No. 10.—Was worked steadily and as strongly as possible as long as it lasted. Was exhausted in April.

Excelsior No. 4.—During the early part of the year the mine ventilation was in fair condition, but at last inspection the Swede heading was found to be poorly ventilated.

Ferndale.—Could not catch the mine at work hence it was not inspected.

Franklin.—This mine was greatly troubled during the spring and summer months by the discharge of large volumes of black-damp from the large exhausted area, especially after the cross-headings which formerly were used as air courses, had been robbed and the heading pillars pulled some distance back. The furnace had to be removed and the stack on furnace shaft raised to improve the ventilation as much as possible. The headings were double, but a light could scarcely be carried beyond the last cut-through. The men suffered a great deal and the mine had to be idle some days on account of the black-damp given off. A large fan should have been erected. The heading pillars were being robbed preparatory to final abandonment. As the cool weather set in the ventilation became more brisk, the distance traveled by the air shorter, and the combination of the two resulted in good ventilation.

Lorraine.—Was in fair condition each time it was inspected. The outcrop was reached in a dozen places and as many holes made to surface. It was ventilated by natural means which would justify the conclusion that it was often poorly ventilated.

Moshannon.—This mine was in poor condition, but work of robbing pillars had reached very close to pit-mouth, some coal that had been left around the outcrop years ago was now attacked and is being worked out by a few men.

Mt. Vernon No. 3.—The ventilation was very bad here when first inspected. It was (with one exception of first left heading in upper drift) fairly ventilated at time of second visit, but was poorly ventilated at time of last visit.

Mt. Vernon No. 5.—This mine was wretchedly ventilated at time of first inspection. A good air shaft was put down by time of next visit, but the ventilation was still much deficient. When next inspected they had built a good furnace at bottom of shaft, and the mine was in good condition.

Mt. Vernon No. 6. This is a new shaft mine sunk 165 feet to Moshannon vein. The coal is the same in structure and character as Eureka No. 5 and Ocean No. 2. The plant is well laid out on top, and the tower, tipples, cages, etc., are strong. No second opening has yet been provided and a proper system of signals was needed, which last has been supplied.

Mt. Vernon Colliery, No. 6.

New Castle.—Was poorly ventilated each time it was inspected and although the ventilation was bad, the condition of the roads for man or beast to travel on was very much worse. I never saw anything like it in my experience.

Ocean No. 1.—The ventilation and drainage in this mine was poor each time the mine was inspected.

Ocean No. 2.—At the time of first two inspections the ventilation in some parts of the mine was poor. The third inspection showed considerable improvement in ventilation. The last inspection showed it in good condition. The drainage, however, did not improve as fast as the ventilation.

Pacific.—Was, generally speaking, in fair condition when inspected. Some rooms were not well ventilated, but these were exceptions. The ventilation during the summer months was produced by natural means; at other times by furnace. The condition of the main road for foot traveling was for a considerable distance very bad.

Ramey.—Was in poor condition when inspected. It was visited twice later on, but each time was idle. A new drift was made at this mine to reach some coal that lay in a rather large swamp. A strike occured at this mine on account of pay for dead-work, which lasted two weeks. The operator paying the price asked.

Shoff.—The ventilation and drainage of this mine were usually found in good condition.

Staffordshire No. 1.—Was poorly ventilated when inspected.

Sterling No. 1.—There are four openings at this mine. The slope opening was very badly ventilated and drained when first inspected. Drift opening was in fair condition at that time. Second inspection showed the ventilation and drainage very poor in No. 1 opening and compresser opening, while the slope opening was in fair condition. The ventilation in No. 4 drift was very deficient when inspected the third time. But last inspection showed considerable improvement in the ventilation, except near the drift mouth. There is at this opening a locomotive that enters the drift some forty or fifty yards, and in cool or cold weather the natural flow of air to the shaft and holes at high side of workings, causes (when the doors are open to pass mules and cars) the smoke and gases from the engine to be carried into the mine, almost causing suffocation to those whose work required them to be near it or who travel to and from their work that way. Four or five holes were made in the roof to let the smoke out, but when the drift was an inlet for air current they availed nothing. Some canvas was hung to prevent it coming in, and I think the results have proven satisfactory.

Sterling No. 2.—This mine was in fair condition at time of first inspection, later inspection, however, showed the upper opening well ventilated, but the lower one was not. The drainage on roads was poor.

Sterling No. 7.—This is a new drift mine which began shipping coal

in December, and has not been inspected. It is located on a branch of Whiteside Run Coal railroad.

Vulcan.—Was in fair condition during the latter part of the year. Only worked nine persons.

Webster No. 4.—At the time of the first inspection this mine was very badly ventilated. Some portions were wretchedly so. The second showed considerable improvement. The last inspection found the ventilation fair though a few places were still deficient.

Woodward.—Was ventilated very poorly both times it was inspected. The mine has since been reduced to nine persons and they are taking out entry pillars preparatory to abandoning it.

MINES OF PHILIPSBURG AND BEECH CREEK REGION.

Acme mine.—Was found in poor condition on my first visit, ventilation was deficient; whitewashed refuge holes were needed on main road. The second visit found ventilation fair throughout, but other things wanting. Propping in rooms was much neglected. Later visits found the mine well ventilated and a new traveling way made, but short of timber in the way of cross-bars.

Ashman.—This mine was in good condition when last inspected. It was exhausted and abandoned in August.

Baltic Nos. 1 and 2.—This mine was poorly ventilated at time of first three visits; some improvements had been made and their effect was beginning to be felt. A new air shaft and removal of furnace nearer the face of the working, worked wonders in improving the ventilation, so that the last inspection found the ventilation very much improved. Drainage on roads was faulty, shelter holes were required and some new timber placing in drift, all of which, I understand, has been done.

Bloomington Nos. 1 and 2.—Always found No. 1 mine in good condition. No. 2 is a new mine that commenced shipping coal October 1, but I have not had an opportunity to inspect it.

Coaldale No. 3.—On first visit ventilation was good throughout the mine, but drainage very poor. At time of second visit it was well ventilated, except No. 6 left heading and straight heading. When last visited the ventilation of the mine was deficient. This was probably due to some important changes that were made in the hauling arrangements, the furnace formerly used was taken down to make a place for a boiler and they had not yet erected a proper ventilating furnace in its place.

Coaldale No. 5.—The ventilation in this mine was found on first visit to be, generally speaking, fair, but was not carried to face of rooms, as is contemplated by the act. Later the mine was fairly ventilated but needed the erection of a few check-sheets to turn the air-current into the rooms.

Colorado.—This mine was in fair condition at time of last inspection.

Cooke's.—Was found fairly ventilated each time visited, except one heading, which was being driven single to make a second opening for the mine. This mine was idle several months of the year, on account of a dispute between operator and coal owner, and there is also a strike for the district price. The strike lasted about ten weeks. The operator paid the district price, but to new hands.

Cuba.—The ventilation was deficient at time of first visit, and drainage bad on roads, but the condition was considerably improved on subsequent visits; an air shaft was put down at face of work and a furnace built there. This mine was also idle some months during summer.

Decatur No. 1.—By some mishap or other no report of this mine was entered in my report for last year. The condition of the mine, however, during that period was very unsatisfactory. During the present year I had to institute legal proceedings to get the owners to provide a map, plotted up within six months past, and keep a copy at the mine as required by the first section of the law. Before the case came up in court they had provided the map as required, and evinced a desire to conform to the law, therefore the proceedings were stayed. On my first visit I found a part of the mine, known as Hole No. 2, very poorly ventilated. The ventilation was generally deficient; on second inspection more especially so in the rooms off the Jones, Walker and Lewis headings. When last inspected the ventilation had been somewhat improved, but it was was still feeble near working faces. The left side of the new drift was very poorly ventilated, and only so because a few hundred feet of brattice boards were needed.

Derby.—This mine was idle when first visited and on second visit the ventilation and drainage were wretched. The superintendent was notified of the condition of things and he promised to remedy the matter at once. When next inspected I found the ventilation greatly, and the drainage somewhat, improved.

Decatur No. 2.—This is a new drift opening near the exhausted Ashman mine. The first coal was shipped in December.

Empire.—This mine was abandoned by the parties formerly operating it, having concluded that all the coal worth taking out was worked out. It has since been opened by another drift, and a considerable quantity of coal may yet be extracted from the out-crops. It was in good condition when visited.

Gazzam No. 1.—During first inspection the ventilation on south side was very poor and drainage on roads generally so. On second inspection the ventilation was fair but drainage as faulty as before. Subsequent inspection showed the ventilation in fair condition and drainage a little improved.

Gazzam No. 4.—This is a new mine; commenced shipping coal about November 1. It is located on Thurston Run and is about a mile or so across the hills from Gazzam. It was found in good condition but had no second opening.

Grass Flat.—This mine was found in good condition on first inspection, except a few places near the faces of headings and a few wet holes on roads. The last inspection found both drifts in good condition, in fact the mines looked more promising that I had ever seen them. A new electric pumping apparatus was put in and was doing the work very satisfactorily.

Glenwood No. 1.—When first inspected the ventilation was fair but there were no *caps for use with props*, no map at mine, or none at all that was reliable, and whitewashed shelter holes was sadly neglected. The company was notified to remedy these defects without delay which they did. The second inspection showed the ventilation in fifth left heading and first right heading, much deficient. The last inspection of the old drift showed the ventilation good, but drainage was poor on roads. About this time they re-opened up the upper seam (E vein), the ventilation in the principal cross headings was very poor but it was speedily remedied by putting on three shifts of men and driving about seventy feet to make a connection with a short return.

Guion.—This mine was visited five times during the year. It was in very bad condition when first inspected, caps for props, doors and brattices were needed, also a second opening. The manager was notified of these things and they were furnished shortly afterwards. A second opening was made, an air shaft sunk, and a new furnace built of arched fire-brick, six feet breadth of bar and six and one-half feet from floor to top of arch. These improvements were beneficial to the general safety and welfare of the mine. A fire originated in some way, so far unexplained, in the room in which the furnace was built; no great damage was done, although it burned for about five days. It is thought that some hot ashes from the furnace were thrown in the gob and started it.

Highland.—This is a new drift opening in the "E" vein (Upper Freeport), very little coal has been shipped from this mine. Only nine persons are employed. The coal is three feet high and of good quality.

Keck's.—This is a new operation consisting of two drifts, one in the cannel seam and the other in the ordinary bituminous coal seam next above. The cannel seam was much disturbed by faults and rolls. In one part of the main heading the coal was six feet high on one side and across the heading and a solid wall of sandstone formed the other. A large fault was being penetrated by the main heading when last visited. It is expected to pass through it in 150–300 feet. A good seam of cannel is opened on the other side.

Kyler.—This mine was found in excellent condition whenever inspected, excepting that on one occasion investigation showed that an important door had been purposely left open by some party passing that way.

Kentuck.—The ventilation was found to be very bad in the main heading at time of first inspection. It was twice visited afterward, each time

the mine being idle. The second inspection found the ventilation very deficient, the furnace out and timber not properly supplied. The air-current was too feeble to get a measurement of air anywhere in the mine. Those in charge were notified to put matters right.

Lancashire No. 1.—The ventilation at time of first inspection was in fair condition, but drainage in headings poor. At time of second inspection the atmosphere of the mine was very smoky and ventilation scant near the working faces. Subsequent inspection showed ventilation good except in up per end of eighth heading.

Laurel Run No. 2.—Was found in good condition each time it was inspected. Two seams of coal are worked at this mine ("E" and "D"). A fault was encountered in the first right heading, and, after going through it, they found coal twelve feet below, there having been a considerable grade in favor of loads in heading, they went back and took up the required amount of bottom to reach coal on other side of fault. When it was opened up it was found to be the "E" vein, so that there was an actual downthrow of over forty-five feet.

Lancashire No. 2.—Inspected first time on February 13. The ventilation was found deficient, and even that was very poorly distributed. Atmosphere on left side of mine very smoky and drainage bad; 15,180 feet of air was measured at furnace, but only 2,460 feet of that quantity reached the working faces. Next inspection found a slight improvement in the ventilation, but rooms off second and third right and in sixth left headings were very poorly ventilated. The mine was visited on two other occasions but was found idle.

Leader slope.—This mine has been idle for a long time, but it has been re-opened last fall and has not since been inspected. It is opened on the "B" or lower Kittanning seam.

Logan.—The ventilation on first inspection was found to be very scant and drainage bad on the roads. On second and subsequent inspections the condition of the mine was generally fair. A new drift was put in to mine the "E" coal. This portion of the mine required a furnace and second opening.

Munson's.—This mine is a new one and is very peculiarly situated, the drift being about fifty yards distant from the Coldstream dam and about twelve feet below the surface of the water in the dam. There are some old workings that lie above the level of the dam, these were holed into by the new workings, effecting a means of escape for all that were employed above the level of the dam in case the dam should break. I gave orders to have the levels taken in the mine, showing the position of places with reference to water in dam, also that automatic doors, strongly built, should be constructed and erected in drift mouths. The intention is to make a good traveling way to the old mine as soon as the level of the dam is nearly reached. The coal lies in two benches with about four-and-a-half feet of a coarse, unlaminated mixture of rock and fire-clay.

The lower bench of the seam is not as easily worked as the upper, consequently the work in the upper bench is more rushed. The condition of the mine when first inspected was very poor, there was no furnace, the shaft not being holed through yet. Second inspection showed the mine in good condition throughout. When last inspected, the mine, with the exception of the main heading, was well ventilated and drained. Shelter holes were ordered to be made on the headings.

Mapleton.—The ventilation was very bad in the sixth and near face of fifth heading when first inspected. The condition of the mine was greatly improved at time of next visit and generally in good order when last inspected.

Montana.—The coal worked at this mine is the "E" vein, and the workings overlie portions of the Spring Hill and Derby mines. Occasionally trouble is encountered in the way of "swags" and "breaks" requiring the exercise of great care in timbering, etc., while driving through them. No accidents have happened that can in any way be ascribed to dangers met with in these "breaks." The mine has been very poorly ventilated as a rule, though no excuse could be offered for it, except penury, as the cover did not exceed thirty or forty feet over any portion of the work. The superintendent was legally notified to put the mine in good condition. This mine was inspected five times. Sometimes a little improvement was noticed, but it could oftener be ascribed to the change in natural conditions than any outlay or effort on part of the owners.

Morgan.—At time of first inspection the ventilation was generally fair, but drainage bad. When next inspected the ventilation was generally deficient, but more especially in the rooms. The last inspection showed the ventilation and drainage fair.

Morrisdale.—Was found in good condition at each inspection, excepting in No. 8 opening, which was exhausting main heading stumps, and had cut off the connection with the former system of ventilation.

O'Shanter.—This mine was not up to the standard when first inspected, the ventilation was too sluggish. Later inspections found the conditions improving until it was in good condition generally.

Pardee No. 1.—This mine was drowned out for a good while in the early part of the year. The first inspection showed the ventilation in the headings and rooms poor, but later visits found the ventilation good, except in the seventh right heading. Drainage good.

Pardee No. 2.—Was in good condition when first inspected, but on next visit ventilation was found deficient in heading and rooms off the straight main heading, except seventh main heading. It was found in good condition when last inspected. Drainage excellent.

Pardee No. 3.—Was found in good condition when inspected.

Rothrock.—This mine was found in fair condition at each inspection.

Sommerville No. 4.—The ventilation was very deficient at first two in-

spections, especially in the first and third right headings and cross headings and rooms connected with them. The superintendent was properly notified and on next inspection there was a considerable improvement in both ventilation and drainage, but it was still far from the standard required by law.

Sommerville No. 5.—This is a new drift opening nearly opposite to No. 4 opening. The condition of ventilation was not good, as the back headings or air courses were too far behind to be of service to men at face of headings.

Troy.—This mine was found in good condition each time it was inspected. It now has the largest daily output of any mine on the Beech Creek railroad.

Tunnel No. 1 (*Centre county*).—Was exhausted during the year.

Tunnel No. 2 (*Centre county*).—Was found in good condition each time it was inspected.

Tunnel (*Clearfield county*). —This mine did not work much this year. J. W. Cooke has leased it and has thirteen persons employed. The mine was idle when visited. The coal produced here is a fair kind of cannel and in fall and winter is in demand for domestic use.

Victor No. 1.—Was in fair condition when it was first inspected, but was poorly ventilated at each subsequent inspection, there was too much leakage in the stoppings. An air crossing was constructed, but it did not have the desired effect. An air hole at face of third right heading was suggested as the best and quickest way to remedy the difficulty. This has since been done.

Victor No. 2.—This mine was poorly ventilated, lacking both in volume and distribution. The number of persons employed was shortly afterward reduced to nine.

Victor No. 3.—The ventilation was found to be fair on first inspection, except in the vicinity of the fault. The drainage on roads was poor. When inspected afterwards the mine was found in good condition.

Mines of Osceola and Vicinity.

Atlanta. –The ventilation of this mine was in fair condition except near face of sixth and seventh heading. Drainage medium. The superintendent was notified to comply with the law. The working force was reduced shortly afterwards to nine persons

Black Diamond.—This mine was visited three times but on two occasions it was idle. When inspected the ventilation was very sluggish in the working places, and a general fixing up of doors and brattices were needed. The operator was notified accordingly.

Central.—When inspected the mine was fairly well ventilated, Bailey's heading excepted, at the first visit. The mine was idle when last visited.

Coaldale No. 4.—The ventilation at this mine was not satisfactory at either times it was inspected. In fact it was very murky when last inspected. The drainage was also rather poor on roads.

Coal Run.—This is a new drift opening near Coal Run. They commenced with more than nine persons late in year, hence mine was not inspected.

Columbia No. 1.—Was only inspected once. The ventilation then was fair but drainage on roads bad. The working force was shortly afterwards reduced to nine persons. The mine is nearly exhausted.

Columbia No. 2.—Was only inspected once. The ventilation was very feeble and insufficient, with drainage fair. It was abandoned May 26.

Drane.—Was in good condition when first inspected, but was deficient in ventilation when next visited. On later inspection it was found in fair condition. Drainage good.

Electric.—Was always found in good condition when inspected.

Elizabeth No. 3.—The ventilation was very scant in this mine when the first and second inspection was made. The escape way was blocked up and not fit for travel. The props supplied were not good enough in quality or size for the kind of work, and the roof and the floor conditions. When inspected the third time the mine was fairly ventilated, two or three rooms on right of main heading excepted. It was in good condition when last inspected.

Fulton.—This is a new mine operated up on a ridge west of Drane mine. It is on the Moshannon seam, and considerable six foot coal has shown up here. There appears to be some disturbance in the vicinity as part of the seam was considerably inclined, as far as developed at time of inspection. It was in good condition.

Retort.—This mine was in fair condition at time of first and second inspection, and ventilation was deficient in the working places on third inspection, about two-thirds of the quantity of air at inlet was lost before reaching the face of the workings.

Reading.—This mine was exhausted in August.

MINES OF BEDFORD AND HUNTINGDON COUNTIES (BROAD TOP REGION).

Bedford.—This is a new drift opening on Sandy Run a little above the Cambria mine. When first inspected it was in very poor condition. The second opening was not completed and the ventilation did not reach the working places. On second inspection it was found in fair condition and had second opening completed.

Brown No. 1.—This mine was in good condition when inspected.

Brown No. 2.—Was in good condition at time of first inspection, but ventilation was faulty on left side of mine (near No. 1 working) at last inspection.

Cambria.—Was in poor condition; there was no perceptible current of air in the mine. Could not get a measurement anywhere. The next

time it was inspected it was in fair condition. The last time it was inspected the air-current was baffling and unsteady; the drainage on roads was poor.

Chevington.—This mine is being reopened. It was abandoned last year on account of a big squeeze which came across the workings; only nine persons are as yet employed.

Crescent.—On first and second inspection it was in fair condition, but when last inspected it was very poorly ventilated; proper cut-throughs were not provided between rooms, and could get no air measurement near working faces. The traveling way was also in bad condition to travel in.

Cunard.—This mine was idle some months in the beginning of year, and since work has started only nine persons were employed in the mine.

Elmira.—This mine was not inspected as it always happened to be idle when I was in that section of the country.

Hicke's.—This is a new drift mine on Shoup's Run near Minersville. When I was in that vicinity it only employed nine persons, but since it has employed more, so that it now comes within the operation of the law.

Hopewell.—Only employs nine persons in mine.

Huntingdon.—The condition of this mine was always most unsatisfactory; the ventilation was sluggish and generally a good way behind in the headings. The air courses were kept too far back; the mine depended principally upon artificial ventilation; there is a kind of a furnace, but it is a small affair at the bottom of a small, shallow shaft. The mine was otherwise in good condition.

Kearney.—The ventilation in this mine was very deficient during the first part of the year, but it was good when last inspected; drainage was fair.

New Hampshire Nos. 1 and 2.—These mines only worked a few months during the fore part of the year. They were idle when my first round was being made in that section and had stopped entirely shortly after wards.

Mt. Equity.—Was in good condition when first inspected, but when next inspected the ventilation was very deficient. This I think was due to the fan being stopped at Brown No. 2, which was idle that day. The last inspection found it well ventilated, except Hawkin's heading and some rooms off McElwees heading. Shelter holes were also required on the extension of main road on right of mine.

Ocean No. 1.—Was very poorly ventilated when first inspected, especially in the Fulton seam. This was somewhat improved by nature in the summer months, there being nothing but natural ventilation. There was a something that was intended as a furnace, but it was only about two feet wide and three feet high at the bottom of a shaft of similar dimensions.

Ocean No. 2.—This mine when operated by E. P. Jenkins & Co., was called "Moredale." It was fairly ventilated when visited.

Prospect.—The ventilation at this mine, excepting the main heading of new drift at time of first visit, was usually found in good condition. The drainage, however, at time of last inspection was very bad on main road.

Robertsdale.—This mine was poorly ventilated until the middle of June, when a sixteen foot fan (of Brazil, Indiana, make), was erected and put in operation. The average quantity obtained at its furnace was found to be from 16,000 to 17,000 cubic feet per minute, the fan gave, running at 65 to 70 revolutions per minute, 63,000 to 66,000 cubic feet per minute. At a distance of three-fourths of a mile from the fan, and after two splits had been taken off the main current, I measured nearly 43,000 cubic feet per minute passing. This is an excellent example of the superiority of the fan over the furnace.

Rocky Ridge. Was not inspected during the year.

MINES ON THE PHILADELPHIA AND ERIE RAILROAD.

Brittanic. Have visited the mine but never inspected it, as it was idle each time I was in that locality (Karthaus). It is a small mine and is working on the "C" veins.

Cataract.—This is a large mine located some six miles east of Karthaus, and considerable territory has already been exhausted. It is badly troubled with irregular rolls and swells, which have no connection with each other, thus rendering it very difficult to get out the coal or handle any water that may make its way therein. The mine was in good condition when inspected

Karthaus.—This mine was only inspected once during the year, as it was considered to be in the Fourth district (this remark also applies to the Brittanic and Cataract mines). When inspected it was fairly ventilated in that portion known as the "old mine," but ventilation in new openings was poor except in rooms off second right heading. Drainage on roads was wretched in places. The ventilation was only natural, hence at times must have been bad.

LIST OF INJURIES BY NON-FATAL ACCIDENTS.

Thigh broken,	2
Leg broken,	9
Arm broken,	1
Ankle broken,	1
Small bone of leg broken,	6
Leg, collar bone and two ribs broken,	1
Leg and collar bone broken and skull fractured,	1
Leg fractured,	2
Knee dislocated,	1
Leg broken and back seriously injured,	1
Skull fractured,	1

Eye lost and face and neck cut badly, ... 1
Head injured and collar bone broken, ... 1
Head and face badly cut, ... 1
Head and hips injured, ... 1
Head and collar bone injured, ... 1
Head and breast injured, ... 1
Shoulder blade broken, ... 2
Shoulder bone broken, ... 1
Collar bone broken, ... 3
Collar bone fractured, ... 2
Back or spine injured, ... 2
Scalp cut and bruised, ... 2
Back injured and two ribs broken, ... 1
Jaw broken, ... 1
Jaw fractured and teeth knocked out, ... 1
Body and loins injured, ... 3
Body and leg bruised, ... 1
Body and hips injured, ... 4
Body and groin cut and bruised, ... 1
Thigh cut and bruised, ... 1
Ribs fractured, ... 1
Legs bruised, ... 3
Ankles bruised, ... 3
Foot cut and bones badly splintered, ... 1
Foot bruised, ... 10
Hand mashed, ... 2
Fingers mashed, ... 1
Abdominal injury, ... 1
Body internally bruised, ... 1
Burnt by powder, ... 1
Wrist fractured, ... 1
Side seriously injured, ... 1
Back and shoulders injured, ... 1
Arm and shoulders crushed, ... 1

The following list of certified mining-bosses and the mines at which they are employed may be useful and is therefore appended:

Mines on Tyrone and Clearfield Railroad and Branches.

Name.	*Mine.*
M. H. Blyth,	Alexander.
A. P. Isenberg,	Ashland.
John E. Hutchinson,	Atlantic No. 1.
William Pollock,	Atlantic No. 2.
Robert Whitehead,	Bellevernon.
T. W. Jones,	Bessemer.

Name.	*Mine.*
John O'Neil,	Black Diamond.
W. S. Edwards,	Central.
James Gatehouse,	Chester.
E. F. Townsend,	Cooke's.
Thomas Young,	Coal Run.
B. F. Smith,	Crane.
Joseph Wheatley,	Doane.
J. A. Woodcock,	Electric.
J. B. Hughes,	Elizabeth No. 3.
James Blades,	Eureka No. 2.
Thomas Forsythe,	Eureka No. 5 and 6.
John Allan,	Eureka No. 8.
John Williams,	Excelsior No. 4.
Edward Lloyd,	Franklin.
E. C. Grundy,	Fulton.
C. J. Paul,	Glenwood.
James Nicholson, Jr.,	Guion.
Thomas Booth,	Kentuck.
Richard Ashcroft,	Lancashire No. 1.
James Higham,	Lancashire No. 2.
John Hawkins,	Laurel Run No. 2.
William Fitzgerald,	Logan.
George Gould,	Loraine.
D. R. Philips,	Mapleton.
T. M. Simpson,	Morgan.
John May,	Mt. Vernon No. 3.
J. S. Campbell,	Mt. Vernon No. 5.
James Meehan,	Mt. Vernon No. 6.
E. C. Howe,	Munson.
W. W. Reed,	Newcastle.
Hugh Rowland,	Ocean No. 1.
Daniel Allsop,	Ocean No. 2.
C. E. Husted,	Pacific No. 1.
Thomas Blythe,	Pine Run.
Evan Evans,	Rainey.
Samuel Twigg,	Retort.
J. J. McGonigal,	Shoff.
Thomas Brown,	Staffordshire.
George Commons,	Sterling No. 1.
Michael Craig,	Sterling No. 2.
John Archibald,	Sterling No. 7.
William Gates,	Victor No 3.
Corn. Meagher,	Washington.
John Stoker,	Webster No. 4.

Mines on Beech Creek Railroad.

Name.	*Mine.*
Richard Lobb,	Acme.
William Irvine,	Baltic.
R. M. Walker,	Bloomington No. 1.
T. W. Barrett,	Bloomington No. 2.
Richard Dunn,	Coaldale No. 3.
Michael Cairns,	Coaldale No. 4.
James Scurfield,	Coaldale No. 5.
Thomas Pilkington,	Colorado No. 1.
Richard C. Morris,	Colorado No. 2.
John D. Jones,	Cuba.
John Todd,	Decatur No. 1.
D. B. Patrick,	Decatur No. 2.
Thomas Stephenson,	Derby.
William Fleming,	Forest.
Alexander Dinsmore,	Gazzam No. 1.
James Methven,	Gazzam No. 4.
Richard Moran,	Grampian Hills.
John Charlton,	Grassflat.
John McCrory,	Keck's.
Charlton Dixon,	Kyler.
Francis O'Rourke,	Lender.
J. M. Click,	Montana.
William McCann,	Morrisdale.
J. S. Kirkwood,	O'Shanter.
D. H. Campbell,	Pardee Nos. 1 and 2.
W. C. Lingle,	Pardee No. 3.
James Starford,	Rothrock.
D. S. Campbell,	Sommerville No. 4.
Robert Spence,	Sommerville No. 5.
John McGonigal,	Troy.
Henry Byron,	Tunnel.
John Hooten,	Victor No. 1.

Mines on Huntingdon and Broad Top Railroad.

W. H. Speer,	Bedford.
Wm. Powell,	Brown Nos. 1 and 2.
John L. Miller,	Cambria.
Lee Ott,	Crescent.
Rhody Maher,	Elmira.
John Lloyd,	Hopewell.
E. F. Gould,	Huntingdon.
John McIntyre,	Kearney.
James C. Allan,	Mt. Equity.

Name.	*Mine.*
Thomas Scallons,	Fairplay No. 2.
Daniel Ryan,	Ocean Nos. 1 and 2.
W. S. Reed,	Prospect.
Charles Conner,	Robertsdale.
George Sleeman,	Rocky Ridge.

MINES ON PHILADELPHIA AND ERIE RAILROAD, KARTHAUS BRANCH.

George Reece,	Brittanic.
D. P. Hyde,	Cataract.
A. G. Spear,	Karthaus.

[Copy.]

COMMONWEALTH OF PENNSYLVANIA, }
County of Clearfield. }

An inquisition taken at Allport mine No. 3, in the county aforesaid, the 4th day of May, in the year of our Lord one thousand eight hundred and ninety, before John McConville, justice of the peace in the county aforesaid. Upon view of the body of Jeremiah Madden, then and there lying dead. Upon the oaths or affirmations, respectively of Henry Washburn, W. P. Jackson, Dr. P. D. Thorn, Richard Fuller, Jasper Lousbery and Philip Sarony, six good and lawful men of the county aforesaid, charged to inquire, on the part of the Commonwealth of Pennsylvania, when, where and by what means the said Jeremiah Madden came to his death, who upon their respective oaths do say, that it appears from the view of the body, and from the evidence produced before them, that the said Jeremiah Madden came to his death on the 4th day of May, 1890, at Allport mine No. 3, by means of scalding and the shock attending thereto, by the explosion or parting of a joint in a steam pipe in the Allport mine No. 3, while said Jeremiah Madden was attending to his duty. While we consider said case of death as purely accidental and unattended by neglect of the company and its employes, we would recommend that the mine Inspector of this district carefully examine the system of steam pipes in said mine, as to the safety of said pipes.

In witness whereof, as well the said coroner as the said jurors, have to this inquisition set their hands and seals, on the day and year and at the place first above mentioned.

JOHN MCCONVILLE, *J. P.*, [SEAL.]
RICHARD FULLER, [SEAL.]
JASPER LOUSBERY, [SEAL.]
PHILIP SARONY, [SEAL.]
DR. P. D. THORN, [SEAL.]
HARRY WASHBURN, [SEAL.]
W. P. JACKSON, [SEAL.]

TABLE I—*Showing location of collieries in the Eighth Bituminous District.*

NAME OF COLLIERY.	Name of operator.	Location—County.	Name of superintendent.	Postoffice address.
Acme	Acme Coal Company	Clearfield	A. V. Hoyt	Philipsburg, Pa.
Alexander	Thos. Blythe & Co.	"	Thos. Blythe	Madera, Pa.
Ashland	A. P. Isenberg	"	A. P. Isenberg	Brisbin.
Ashman	Lee & Ashman	"	T. J. Lee	Philipsburg, Pa.
Atalanta	Sam. E. Pfoutz	"	Sam. E. Pfoutz	"
Atlantic No. 1	Berwind White Coal Mining Company	"	W. A. Crist	Osceola Mills, Pa.
Atlantic No. 2	" " " "	"	"	"
Baltic	Baltic Coal Company	"	Jos. H. Riley	Philipsburg, Pa.
Bedford	Bedford Coal and Iron Company	Bedford	John Cessna	Bedford, Pa.
Bessemer	Henry Liveright & Co.	Clearfield	Henry Liveright	Osceola Mills, Pa.
Bellevernon	H. K. Myers	"	H. K. Myers	"
Black Diamond	R. A. Jackson	Centre	R. A. Jackson	"
Bloomington No. 1	Bloomington Mining Company	Clearfield	John Dinsmore	Glen Richey, Pa.
Bloomington No. 2	" " "	"	"	"
Brown No. 1	Sweet & Brown	Bedford	W. H. Sweet	Saxton, Pa.
Brown No. 2	" "	"	"	"
Brittanic	Mortimer & Co.	Clearfield	George Reece	Karthaus, Pa.
Cambria	The United Collieries Company	Bedford	Jos. Campbell	Houtzdale, Pa.
Cataract	B. W. C. M. Company	Clearfield	A. G. Cooke	Bellefonte, Pa.
Champion	John B. Reed	"	John B. Reed	Brisbin, Pa.
Chevington	Lambrith Coal Mining Company	Bedford	John Langdon	Hopewell, Pa.
Central	T. C. Heins	Centre	T. C. Helms	Osceola Mills, Pa.
Chester	Moshannon Vein Coal Mining Comp'ny	Clearfield	P. B. Zentmyer	Madera, Pa.
Coaldale No. 3	O. P. Jones	"	James Fleming	Philipsburg, Pa.
Coaldale No. 4	" "	"	"	"
Coaldale No. 5	" "	"	"	"
Colorado	Jackman & Ellsworth	"	"	"
Columbia No. 1	J. L. Mitchell	"	B. F. Smith	Osceola Mills, Pa.
Columbia No. 2	" "	"	"	"
Columbia No. 3	" "	"	M. B. Courtright	Madera, Pa.
Cooke's	J. W. Cooke	"	H. T. Cooke	Woodland, Pa.
Crescent	Lambirth Coal Mining Company	Bedford	John Langdon	Hopewell, Pa.
Cuba	Cuba Coal Company	Clearfield	John D. Jones	Philipsburg, Pa.
Cunard	R. B. Wigton & Sons	Bedford		
Decatur No. 1	John Nuttal & Co.	Clearfield	G. W. McGaffey	"
Decatur No. 2	" " "	"	"	"
Derby	Thos. Barnes & Bro.	"	Thos. Barnes	"
Deane	T. C. Helms	"	T. C. Helms	Osceola Mills, Pa.
Eichelberger	J. A. & E. Eichelberger	Bedford	John Loyd	Saxton, Pa.
Elmira	Maher & Baumgardner	"	Rhody Maher	Six Mile Run, Pa.
Empire	Lee & Ashman	Clearfield	T. J. Lee	Philipsburg, Pa.
Electric	T. C. Helms	Centre	T. C. Helms	Osceola Mills, Pa
Elizabeth No. 2	Elizabeth Coal Company	Clearfield	C. H. Blair	Tyrone, Pa
Elizabeth No. 3	" " "	Centre	"	"
Eureka No. 2	Berwind White Coal Mining Company	Clearfield	W. A. Crist	Osceola Mills, Pa
Eureka No. 5	" " "	"	"	"
Eureka No. 6	" " "	"	"	"
Eureka No. 8	" " "	"	"	"
Eureka No. 10	" " "	"	"	"
Excelsior No. 4	" " "	"	"	"

TABLE I—*Continued.*

NAME OF COLLIERY	Name of operator.	Location	Name of superintendent.	Postoffice address.
Ferndale,	John Maurice & Sons,	Clearfield,	John Maurice,	Brisbin, Pa.
Forest,				
Franklin,	B. W. C. M. Company,	"	W. A. Crist,	Osceola Mills, Pa.
Fulton,	H. " " "	"		
Gazzam No. 1	Clearfield Bituminous Coal Corporat'n,	"	R. A. Shillingford,	Peale, Pa
Gazzam No. 4,	" " " "	"	" "	"
Grassflat,	" " "	"		
Glenwood,	Williams, Morris & Co.,	"	John M. Campbell,	Philipsburg, Pa.
Guion,	Sandford & Duncan,	"		
Hegarty,	Coal Run Coal Company,	"	A. J. Foreman,	Osceola Mills, Pa
Highland,	John Walton,	"	John Walton,	Philipsburg, Pa.
Hickes,	A. H. & A. G. Hickes,	Huntingdon,	A. G. Hickes,	Coalmont, Pa.
Huntingdon,	E. F. Gould,	"	E. F. Gould,	Dudley, Pa.
Karthaus,	Spear & Cowen,	Clearfield,	A. G. Spear,	Karthaus, Pa.
Kearney,	Jos. E. Thropp,	Bedford,	T. A. Jones,	Kearney, Pa.
Keck's,	Woodland Cannel and Bitu. Coal Co	Clearfield,	J. M. Keck,	Keecksburg, Pa.
Kentuck,	Samuel Murphy,	"	Samuel Murphy,	Houtzdale, Pa.
Kyler,	R. C. Fishburn,	"	R. C. Fishburn,	Munson Station, Pa.
Lancashire No. 1,	Thos. Barnes & Bro.,	"	Thomas Barnes,	Philipsburg, Pa.
Lancashire No. 2,	" "	"	" "	"
Laurel Run,	Josiah M. Bacon,	"	G. W. McGaffey,	"
Lender,	A. B. & G. W. Lender,	"	G. W. Lender,	Munson Station, Pa.
Logan,	Henry Liveright,	"	Henry Liveright,	Osceola Mills, Pa.
Loraine,	George Gould,	"	George Gould,	Brisbin, Pa.
Mapleton,	Henry Liveright,	"	Henry Liveright,	Osceola Mills, Pa.
Montana,	J. Swires & Co.,	"	Jacob Swires,	Philipsburg, Pa.
Moredale,	E. P. Jenkins & Co.,	Huntingdon,	Jas. R. Jenkins,	Six Mile Run, Pa.
Morgan,	Henry Liveright,	Clearfield,	Henry Liveright,	Osceola Mills, Pa.
Morrisdale,	R. B. Wigton & Sons,	"	Jas. E. Sharpless,	Philipsburg, Pa.
Moshannon,	United Collieries Company,	"	Jos. Campbell,	Houtzdale, Pa.
Mt. Equity,	Kemble Iron Company,	Bedford,	Wm. Lander,	Riddlesburg, Pa.
Mt. Vernon No 1	United Collieries Company,	Clearfield,	Jos. Campbell,	Houtzdale, Pa.
Mt. Vernon No. 3,	" " "	"	"	"
Mt. Vernon No. 5,	" " "	"	"	"
Mt. Vernon No. 6,	" " "	"	"	"
Munson's,	Munson Coal Company,	Centre,	R. E. Munson,	Philipsburg, Pa.
New Hampshire No. 1,	R. J. Hughes,	Bedford,	Thos. Scollins,	Six Mile Run, Pa.
New Hampshire No. 2,	" "	"	"	"
Newcastle,	John B. Reed,	Clearfield,	John B. Reed,	Brisbin, Pa.
Ocean No. 1,	B. W. C. M. Company,	"	W. A. Crist,	Osceola Mills, Pa.
Ocean No. 2,	" " "	"	"	"
Ocean No. 1,	W. H. Sweet,	Huntingdon,	W. H. Sweet,	Saxton, Pa.
Ocean No. 2,	"	"	"	"
O'Shanter,	Beech Creek Cannel Coal Company,	Clearfield,	Jas. S. Kirkwood,	Glen Richey, Pa.
Pacific No. 1,	B. W. C. M. Company,	"	W. A. Crist,	Osceola Mills, Pa.
Pardee No. 1,	Geo. J. Magee,	"	W. C. Lingle,	Philipsburg, Pa.
Pardee No. 2,	" "	"	"	"
Pardee No. 3,	" "	"	"	"
Prospect,	E. P. Reed,	Huntingdon,	W. W. Reed,	Dudley, Pa.
Ramey,	Thos. Barnes,	Clearfield,	Evan Evans,	Ramey, Pa

Retort,	Blair Bros.,	Centre,	C. H. Blair.	Tyrone, Pa.
Reading,	Henry Liveright,	Clearfield,		
Robertsdale No. 1,	Rockhill Coal and Iron Company,	Huntingdon,	Charles Conner,	Robertsdale, Pa.
Robertsdale No. 2,	" " " "	"	"	"
Rocky Ridge,	Sleeman & Co.,	"	George Sleeman,	Saltillo, Pa.
Rothrock,	R. B. Wigton & Sons,	Clearfield,	Charles E. Sharpless,	Philipsburg, Pa.
Shoff,	Vulcan Coal and Coke Company,	"	"	"
Sommerville No. 4,	Sommerville & Buchanan,	"	J. S. Somerville,	Winburne, Pa.
Sommerville No. 5,	" "	"	"	"
Sterling No. 1,	Sterling Coal Company,	"	Thos. E. McHugh,	Houtzdale, Pa.
Sterling No. 2,	Craig & Leonard,	"	Michael Craig,	Brisbin, Pa.
Sterling No. 7,	Sterling Coal Company,	"	Thos. E. McHugh,	Houtzdale, Pa.
Staffordshire,	Thos. Barnes & Co.,	"	Thomas Barnes,	Philipsburg, Pa.
Troy,	R. B. Wigton & Sons,	"	Chas. E. Sharpless,	"
Tunnel,	J. W. Cooke,	"		
Tunnel No. 1,	Clearfield Bituminous Coal Corp.,	Centre,	R. A. Shillingford,	Peale, Pa.
Tunnel No. 2,	" " " "	"	"	"
Victor No. 1,	Victor Coal Company,	Clearfield,	John Walton,	Philipsburg, Pa.
Victor No. 2,	" " "	"	"	"
Victor No. 3	" " "	"	"	"
Victor No. 6	" " "	"	"	"
Vulcan,	Vulcan Coal and Coke Company,	"	Chas. E. Sharpless,	"
Washington,	Thomas & Co.,	"	Cornelius Meagher,	"
Webster No. 4,	Beulah Coal Company,	"	Jas. H. Minds,	Ramey, Pa.
Woodward,	Thos. Barnes & Co.,	"	Thomas Barnes,	Philipsburg, Pa.

TABLE NO. II—*Showing the total number of tons of coal mined and tons of coke produced in each colliery, number of days worked, number of employees, number of persons killed and injured, number of kegs of powder used, &c., in the Eighth Bituminous Mine District, for the year ending December 31, 1890.*

NAMES OF COLLIERIES	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents.	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number mules.	Stationary engines.	Number coke ovens.
Acme,	Clearfield,	54,377		54,377	221	67				1	9		
Alexander,	"	26,776		26,280	220½	52		1	140		12		
Ashland,	"	31,359		31,359	201	59			140		7		
Ashman,*	"	13,164		13,164	187			1	45				
Atalanta,	"	18,505		18,053	281	10			80		4		
Atlantic No. 1,	"	258,589		254,847	240	268				3	35	3	
Atlantic No. 2,	"	129,898		127,670	220	163				6	16	3	
Baltic,	"	104,152		104,152	251½	117	1	1	506		17		
Bedford,	"	14,932		14,932	95	72					5		
Bessemer,	"	5,889		5,878	175	25			64		3		
Beaver Run,	"	9,459		9,459	106	9			60		1		
Bellevernon,	Huntingdon,	2,096		2,096	26	33		2	20		4		
Benedict,	Centre,	7,042		7,042	200	9							Dynamo.
Black Diamond,	Clearfield,	17,108		17,108	196	36				1	6	1	1
Bloomington No. 1,	"	125,640		125,640	243½	164		1	890		9		
Bloomington No. 2,	Bedford,	3,600		3,600	66	39					1		
Brown No. 1,	"	55,040		54,320	252	76			60		7		
Brown No. 2,	Clearfield,	67,300		66,695	254	114	1	5	125	1	9	2	
Brittanic,	Bedford,	15,424		15,424	272	25					2		
Cambria,	Clearfield,	78,918		78,500	277	110		1	100	1	12	1	
Cataract,	"	98,839		98,839	275	138		4	730		27		
Catharine,	"	10,228		10,228	187	14					2		
Champion,	Bedford,	17,000		17,000	162	45					2		
Chevington,	Centre,	2,061		2,061	59	9					1		
Central,	Clearfield,	42,200		42,200	218	64			155		6		
Chester,	"	5,320		5,320	60	27					1		
Coaldale No. 3,	"	139,027		138,662	266	217	2	2	648	5	20	2	
Coaldale No. 4,	"	20,208		20,208	216	35		1	140		3		
Coaldale No. 5,	"	187,000		186,080	275	205	1		924	3	18	1	
Colorado,	"	101,714		101,714	285	105			350		15		
Columbia No. 1,	"	19,818		19,118	232				85				

Columbia No. 2	Clearfield	13,782		13,782	115				100					
Columbia No. 3	"	45,546		45,546	253	56		2	364		4			
Cooke's	"	12,882		12,882	157	28			5		2			
Crescent	Bedford	85,283		85,149	269	91			300	1	6	1		
Cuba	Clearfield	32,066		31,265	145	68		1	125		6			
Cunard	Bedford	600				6								
Decatur No. 1	Clearfield	137,478		137,028	277	144		1			16			
Decatur No. 2	"	3,155		3,100	50	31								
Derby	"	37,288		37,288	212	61	1		250		7			
Drane	"	68,949		68,949	258	81			243		8			
Elmira	Bedford	5,880		5,880	180	20			60		2			
Empire	Clearfield	10,056		10,056	144				50					
Elchelberger	Bedford	6,062		6,012	175	9					2			
Electric	Centre	28,088		28,088	201½	45			112		5			
Elizabeth No. 2	Clearfield	12,902		11,028	240	12					2			
Elizabeth No. 3	Centre	34,962		34,692	304	53			130		8			
Eureka No. 2	Clearfield	186,744		185,726	251	203					39			
Eureka No. 5	"	170,815		170,454	230	255	2			6	30	2		
Eureka No. 6†	"													
Eureka No. 8	"	131,734		133,303	235	149	1				18			
Eureka No. 10	"	28,400		28,388	100									
Excelsior No. 4	"	51,222		50,868	240	72					11			
Ferndale	"	13,000		13,000	178	24					4			
Franklin	"	73,011		73,384	236	81	1				25	1	Locomotive.	
Forest	"	1,541		1,541	20	29					1			
Fulton	"	18,211		18,095	132	34			140		3			
Gazzam No. 1	"	83,746		83,482	268	151		3	1,063	1	7	1	100	
Gazzam No. 4‡	"													
Grassflat	"	126,318	45,276	51,601	291	241	1	2	1,050	1	15	1		
Glenwood	"	104,699		104,699	256	131			450		19			
Guion	"	17,670		17,670	200	26			130		4			
Hegarty	"	4,148		4,148	92	18			20		3			
Highland*	"	3,338		3,338	110	10					1			
Huntingdon	Huntingdon	27,854		27,854	210	61	1		150		5			
Hicke's	"	1,912		1,912		11			6		1			
Karthaus	Clearfield	75,159		75,159	272	91		1	360		15			
Kearney	Bedford	63,615	43,000	2,811	283	131	1		310	1	11		110	
Keck's	Clearfield	2,086		2,086	89	27			31		2			
Kentuck	"	11,841		11,841	121¼	34			110		3			
Kyler	"	71,897	11,669	54,070	258	108			505	1	11		50	
Lancashire No. 1	"	70,813		70,813	218	96		1	400		12			
Lancashire No. 2	"	51,596		51,596	235	86			300		10			
Laurel Run	"	65,709		65,367	220	90					7			
Lender	"													
Loraine	"	56,044		56,044	210	68		1			4			
Logan	"	60,513		60,483	261	69		2	355		14			
Mapleton	"	38,260		38,114	243	46			268		7			
Montana	"	71,520		71,520	216	116		5			10			
Moredale	Huntingdon	6,591		6,591	110				10					
Morgan	Clearfield	24,496		24,353	245	38			90		3			
Morrisdale	"	64,508	35,825		232	111				1	8		106	
Moshannon	"	15,289		15,289	238	10			75		4			
Mt Equity	Bedford	67,413	35,201	5,497	305	85					17			

* Exhausted during the year † Reported with Eureka No. 5 ‡ Reported with Gazzam No. 1.

TABLE II—*Continued.*

NAMES OF COLLIERIES	Location—County.	Total production in tons of coal.	Total production in tons of coke.	Total shipment in tons of coal.	Number days worked.	Number persons employed.	Number fatal accidents	Number non-fatal accidents.	Number kegs powder used.	Number steam boilers.	Number mules.	Stationary engines.	Number coke ovens.
Mt. Vernon No. 1.	Clearfield.	10,630		10,630	140	69		1	80		5		
Mt. Vernon No. 3.	"	47,555		47,550	238	66			125		5		
Mt. Vernon No. 5.	"	103,376		102,987	231	167	2	2	300	2	16	1	
Mt. Vernon No. 6.	"	4,515		4,215	56	31			10	4	1	1	
Munson's.	Centre.	8,336		5,231	130	38			98		4		
New Hampshire Nos. 1 and 2.	Bedford.												
New Castle.	Clearfield.	49,093		49,093	229	76					4		
Ocean No. 1.	"	91,374		90,306	260	109	1				20		
Ocean No. 2.	"	126,653		120,455	241	156				5	27	1	
Ocean No. 1.	Huntingdon.	39,051		39,051	260	79			280		8		
Ocean No. 2.	"	4,918		4,988	62	36			17		4		
O'Shanter.	Clearfield.	90,612		90,165	232	119			490		6		
Pacific.	"	159,216		159,823	254	178	1				39		
Pardee No. 1.	"	71,585		71,585	264	155		6	400	3	14	1	
Pardee No. 2.	"	246,027		246,027	269	242		1	800	2	14	1	
Pardee No. 3.	"	33,930		33,930	257	35		4	100		2		
Prospect.	Huntingdon.	45,000		45,000	200	74			100		10		
Ramey.	Clearfield.	40,939		40,939	216	72	1		100		4		
Retort.	Centre.	33,284		33,182	278	49					3		
Robertsdale.	Huntingdon.	179,360	52,825	95,428	297	291		5	1,310	10	30	2	116 Bee Hive. 32 Belgian.
Rocky Ridge.	"	19,040		19,040	160	35			240	5			
Rothrock.	Clearfield.	124,997		124,987	195	171				3	5	2	
Reading.*	"	5,118		5,087	160	9			34				
Sheff.	"	78,906		78,906	185	89	2				6		
Sobieski.	"					12		3	1,000		6		
Sommerville No. 4.	"	117,979		117,979	272	135		6	80		1		
Sommerville No. 5.	"	9,849		9,849	83	31		2	800	1	32	2	Locomotives.
Sterling No. 1.	"	200,578		197,598	220	206	1	6	150		4		
Sterling No. 2.	"	24,290		24,290	153	32							
Sterling No. 7.	"								150		4		
Staffordshire.	"	22,133		22,133	140	62	1				10		
Troy.	"	152,063		152,063	230	233	1				1		
Tunnel.	"	5,236		5,236	73	15					3		
Tunnel No. 1.†	Centre.												

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TABLE III—*Showing the number of each class of employes at each colliery in the Eighth Bituminous Mine District, during the year 1890.*

NAME OF COLLIERIES	Location	County	Inside foreman or mine boss.	NUMBER OF PERSONS EMPLOYED INSIDE. Miners.	Miners' boys.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	NUMBER OF PERSONS EMPLOYED OUTSIDE. Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen.	Slate pickers.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	Grand total. Inside and outside.
Acme.	Cleartield.		1	42	6	2	6	2	61					1	1	2	63
Alexander.			1	42	4	1	2	1	50								50
Ashland.			1	40	10		2	2	55								55
Ashman.*																	
Atalanta.			1	9			1		9								9
Atlantic No. 1.			1	196	29	9	15	6	256		2	2		1	1	6	262
Atlantic No. 2.			1	120	16	11	6	2	154		1	1		1	1	4	158
Baltic Nos. 1 and 2.			1	90	16	1	2	1	110		1			1	1	3	113
Bedford.			1	57	6	1	4	1	69								69
Bessemer.			1	51	2		2	2	57								57
Bellevernon.			1	24	2		2	1	31		1			1	1	3	34
Black Diamond.			1	25	2		2	1	33		1	1		1	1	4	37
Bloomington No. 1.	Centre.		1	121	14	4	6	4	150		2			1	1	4	154
Bloomington No. 2.	Clearfield.		1	33	1		1		36		1					1	37
Brown No. 1.	Bedford.		1	50	10	1	6	4	72		1	1		1	1	4	76
Brown No. 2.			1	80	4	2	6	2	104		2			1	1	4	108
Brittanie.	Cleartield.		1	18	6	2	2	1	29		1	1	1			3	32
Cambria.	Bedford.		1	73	6	4	10	2	103		2			1	1	4	107
Cataract.	Cleartield.		1	100	6	4	9	1	126		2	1		1	1	5	131
Champion.			1	35	6		2		44		1					1	45
Chevington.			1	39					40								40
Central.	Bedford.		1	32	1	1	1	1	36		1			1	1	3	39
Chester.	Centre.		1	20	3	3	2	1	25								25
Coaldale No. 3.	Clearfield.		1	160	16	3	2	1	205		1	1		1	1	4	209
Coaldale No. 4.			1	24	3		2	1	31								31
Coaldale No. 5.			1	145	23	3	2	1	195		1	1		1	1	4	199
Colorado			1	75	11	2	10	2	101		1			1	1	3	104

| | | |

TABLE III *Continued.*

NAMES OF COLLIERIES	Location—County.	NUMBER OF PERSONS EMPLOYED INSIDE.							NUMBER OF PERSONS EMPLOYED OUTSIDE.							Grand totals, inside and outside.
		Inside foreman or mine boss.	Miners.	Miners' boys.	All company men.	Drivers and runners.	Door boys and helpers.	Total inside.	Outside foreman.	Blacksmiths and carpenters.	Engineers and firemen	Slate pickers.	All company men.	Superintendents, book-keepers and clerks.	Total outside.	
Mt. Equity	Bedford.	1	54	5	3	10	5	78		2			4	1		85
Mt. Vernon No. 1	Clearfield.	1	50	6	3	4	2	66		1			1		2	69
Mt. Vernon No. 3	"	1	42	8	2	5	2	60		1			4	1	6	66
Mt. Vernon No. 5	"	1	120	22	3	10	2	158		2			6	1	9	167
Mt. Vernon No. 6	"	1	20		4	2		27		1			2	1	4	31
Munson	Centre.	1	30	1		2	1	35		1			1	1	3	38
New Hampshire No. 1	Bedford.															
New Hampshire No. 2	"															
Newcastle	Clearfield.	1	52	15		5	1	74		1			1		2	76
Ocean No. 1	"	1	74	13	3	8	2	101		1			6	1	8	109
Ocean No. 2	"	1	119	11	8	6	4	149		1	2		5	1	9	158
Ocean No. 1	Huntingdon.	1	62	7		5	1	76		1			1	1	3	79
Ocean No. 2	"		26	4		2	1	33		1			1	1	3	36
O'Shanter	Clearfield.	1	90	12		5	4	112		2			4	1	7	119
Pacific No. 1	"	1	130	20	4	13	3	171		1			5	1	7	178
Pardee No. 1	"	1	115	13	2	11	4	146		1			7	1	9	155
Pardee No. 2	"		190	15	4	13	7	229		1			10	2	13	242
Pardee No. 3	"	1	24	5	1	2	1	34					1		1	35
Prospect	Huntingdon.	1	50	6	2	8	2	69		1			3	1	5	74
Ramey	Clearfield.	1	50	10	2	3	2	68		1			2	1	4	72
Retort	Centre.	1	35	2	4	3	2	47					1	1	2	49
Robertsdale No. 1	Huntingdon.	1	150	40	10	22	10	233		6	2	35	12	3	58	291
Rocky Ridge	"	1	30				1	33					2		2	35
Rothrock	Clearfield.	1	150		2	6	3	162		2	2		4	1	9	171
Reading	"															
Shoff	"	1	75		1	6	3	86		1			2		3	89
Sobieski	"		9			1		10					1	1	2	12
Sommerville No. 4	"	1	107	9	2	6	3	128		1			5	2	8	136
Sommerville No. 5	"	1	24	2	2	1		30		1			1		2	32

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TABLE IV.—*List of Fatal Accidents occurring in and about the mines of the Seventh Bituminous District for the year ending December 31, 1890.*

Date of accident	NAME OF PERSON	Occupation	Age.	Widow.	No. of orphans.	Name of colliery.	Location County.	Nature and cause of accident.
Jan. 6.	Stace Neveling.	Miner.	22	M.	1	Shoff.	Clearfield.	Killed by a fall of coal while undermining it and neglecting to prop or sprag it properly.
6.	Al Neveling.	"	17	S.	..	"	"	Killed by same fall of coal described above. They were brothers and worked in the same room.
Feb. 11.	Robt. Watson.	"	38	M.	2	Brown No. 2.	Bedford.	Fatally injured by fall of slate at face of his working place. The piece of slate was surrounded on all sides by slips; he died six hours after receiving the injury.
24.	John Upson.	"	47	M.	5	Ramey.	Clearfield.	Was fatally injured by a fall of slate which fractured his skull, from the effects of which he died the day following. He worked in a heading and was in the act of taking down some loose slate when he was injured.
Mar. 28.	John Yenshaw.	"	28	M.	2	Pacific No. 1.	"	Killed by a fall of slate; he was drawing ribs and expecting a fall, having cut several props through for that purpose; he ventured too far in the gob, when the roof fell, killing him almost instantly.
Apr. 11.	Michael Stone.	"	60	M.	..	Huntingdon.	Huntingdon.	Was killed by a fall of coal while he was undermining it without sprags.
28.	Joseph Helsel	Driver.	16	S.	..	Franklin.	Clearfield.	Died from lockjaw, brought on by a badly bruised and broken leg, which had been jammed between mine cars.
May 4	Jeremiah Madden.	Fireman.	25	M	2	Coaldale No. 3.	"	Died in the mine from suffocation. It was his duty to keep the pump running during night, and one of the steam pipes near the pump having become disconnected it is thought he tried to reach the main valve, only eighteen feet distant, to shut off the steam, but he missed it and was suffocated by the escaping steam.
15	John Bartoes.	Miner.	28	M.	1	Mt. Vernon No. 5.	"	Killed in heading while endeavoring to bar down a piece of slate; it loosened the piece under which he was standing, which fell, killing him outright.
25	Albert Bedener.	"	33	M.	3	Victor No. 3.	"	Killed by a fall of rock; he had just fired a shot in a cut-through on side of road; he went up to it without sounding the roof, and it fell on him.
26.	Wm. Fellows.	"	28	M.	2	Mt. Vernon No. 5.	"	Fatally injured by a fall of coal in a heading while undermining a small pillar of coal that had been left in to protect him while making the "cut." While mining it out from the front inwards, the coal fell over on him from a smooth slip that had not been before detected.
June 23.	John Lume.	"	40	M.	2	Grass Flat.	"	Killed while undermining a "loose end" without sprags.
26.	Joseph Posterick.		53	M.	..	Eureka No. 5.	"	Killed by a fall of slate while in the act of taking out a post under the "brushing," preparatory to blasting it; when the post was drawn a slab of slate fell and killed him instantly.

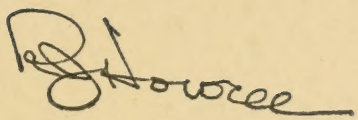
July	10.	James Peters.	"	16	S.		Derby.	"	Fatally injured by a fall of slate while visiting his brother's room.
	18.	Francois Lejuene.	"	33	M.	4	Eureka No. 6.	"	Killed by a fall of slate while mining. He had neglected to properly post his working place, although warned to do so.
	22.	Eli Box.	"	37	M.	9	Ocean No. 1.	"	Was killed by a fall of coal he was undermining. He had neglected to sprag the coal while taking out a small pillar (of coal) left to support it.
	25.	Frank Rosewell.	Trapper.	14	S.		Eureka No. 8.	"	A mule-driver allowed him to ride his mule to water; he fell off it, and his foot becoming entangled in the harness, he was dragged to death.
	30.	Henry Mosby	Miner.	12			Kearney.	Bedford.	Was caught under a fall of roof slate which extended about six feet over some cross-bars that had been set with a view of holding it, but there was a slip near the last cross-bar which had not been noticed by his father; it fell, and he died two hours afterwards from the effects of the injury.
Aug	8.	Wm. Campbell.	"	35	M.		Coaldale No. 3.	Clearfield.	He had taken in a box of dynamite caps for use and was taking one out, when in some way they became ignited and exploded; twenty-four caps were taken out of his body. He died nine days afterwards from injuries received.
	19.	George Crew.	"	21	M.	3	Webster No. 4.	"	Was in the act of reaching for some tamping for a shot he was charging when the coal he was about to blast fell on him, fatally injuring him. He died in four days afterwards.
Oct	31.	George Richmond.	"	17	S.		Baltic No. 1.	"	He and another young man had got a car from the driver and had pushed it in the room far enough for loaded car to pass, the other young man stepped away from the empty car to stop the mule, which had started before the driver was ready. There being a little grade the car started towards the heading and deceased got between it and rib on inside of curve, just then a loaded cars truck the empty one, and he was jammed between the car and rib. His back was broken and he died in a few minutes after the accident.
Nov	6	John Horoat.	"	38	M.		Troy.	"	Was killed by a piece of coal falling out of an A dip which he should have sprag ged carefully, but did not sprag at all.
	28.	John Murray.	"	62	M.		Sterling No. 1.	"	Deceased was undermining a "leg" or spurn of coal (that had been left in to support pillar while undermining), when the coal fell; a large piece struck him on the head with great force, dislocating his neck and causing almost instant death.
	29.	Henry Twist.	"	23	S.		Staffordshire.	"	He and partner had fired a shot in the slate over the coal and were in the act of cleaning the shot up. They had not examined to see whether any loose slate was hanging around, when a piece of slate fell on him, badly bruising him internally. He died five days afterwards from the effects of his injuries.

TABLE V—*List of Non-Fatal Accidents occurring in and about the mines of the Eighth Bituminous Mine District for the year ending December 31, 1890.*

Date of accident.	NAME OF PERSON.	Occupation.	Age.	Married	Name of colliery.	Location—County.	Nature and cause of accident.
Jan. 7.	James Burns.	Miner.	55	M.	Columbia No. 1.	Clearfield.	Received a scalp wound while knocking a sprag out; he also wrenched his side in the endeavor to get away from the fall.
17.	Otto Nelson.	"	28	S.	Sterling No. 1.	"	Injured by the explosion of a can of powder holding about four pounds; he was filling a cartridge with the lamp on his head when the powder was ignited by a falling spark.
17.	Matthew Hunter.	"	35	S.	Brown No. 2.	Bedford.	Shoulder-blade broken by a fall of coal.
17.	Alex. Everhart.	"	40	M.	"	"	Wrist fractured by a fall of rock.
18.	John T. Johns.	"	44	M.	Excelsior No. 4.	Clearfield.	Back injured by a fall of rock.
19.	James Shannon.	"	17	S.	Atlantic No. 1.	"	Had back badly bruised by a fall of coal from a slip near a clay vein.
20.	John Shannon.	"	27	S.	"	"	Bad scalp wound; caused by being struck by a prop which a fall from a clay vein knocked out.
21.	Hugh McGinty.	"	21	S.	Logan.		Thigh broken in two places by a fall of roof coal and slate.
24.	David McMonigal.	"	35	M.	Franklin.	"	Injured across the loins by a fall of top coal that he had been wedging; he reached under it to get some coal out when it fell as stated.
Feb 4.	Jonathan Andrews.	Driver.	32	M.	Ashman.	"	Back hurt and rib broken while hauling rails on top of car; he sat too high and was caught in door frame.
6.	Henry McElwee.	Miner.	19	S.	Mt. Vernon No. 1.	"	Collar-bone broken and head bruised by a fall of coal from a slip.
13.	Charles Brough.	"	17	S.	Pardee No. 1.	"	Leg cut and small bone of same broken by small piece of slate which fell from roof; it could have been posted or taken down.
14.	Peter Johnson.	"	33	M.	Grass Flat.	"	Leg fractured by fall of coal which was not properly spragged.
14.	James Gibson.	"	50	M.	Ocean No. 3.	"	Foot bruised by lump of coal falling on it.
15.	John Makepiece.	"	40	M.	"	"	Leg bruised by lump of coal striking it.
21.	Daniel Thomas.	"			Eureka No. 8.	"	Side hurt seriously by fall of top coal while loading a car.
Mar. 5.	Frank Lermauer.	"	15	S.	Coaldale No. 5.	"	Leg broken by being jammed between bank cars outside of mine where he was not employed.
6.	James Green.	Driver.	25	M.	Logan.	"	Foot injured by being jammed between cars.
12.	John Gooby.	Miner.	25	S.	Coaldale No. 3.	"	One leg broken in two places, collar-bone broken, small fracture of skull and probably some ribs broken by being struck with empty trip on side track.
21.	John Rodtke.	"	40	M.	Ocean No. 3.	"	Foot bruised by being struck with an iron rail.
28.	Andrew Lumberg.	"	37	M.	Grass Flat.	"	Leg and breast bruised by a fall of coal which should have been spragged.
April 1.	John Pierson.	"	27	M.	Gazzam.	"	Shoulder-bone broken by fall of coal in which he had fired a shot; the shot failed to bring it down and he went under it to mine it deeper, when it fell with above result.
2.	John Strachn.	"	48	M.	Pardee No. 3.	"	Had his hand badly crushed by a fall of rock.

	4	Wm. Conners.	"	27	S.	Atlantic No 1.	"	Foot badly bruised by a fall of coal from the face while he was filling a car.
	8.	George Johnsat.	"	..	..	Victor No. 1.	"	Leg bruised by being caught between empty cars while trying to get into one of them.
	10.	James McGinley.	Driver.	14	S.	Morrisdale.	"	Skull slightly fractured by being kicked by the mule he was driving.
	12.	John Hill.	Miner.	51	M.	Gazzam.	"	Two ribs fractured by a fall of draw slate.
	21.	John Yoco.	"	20	S.	Acme.	"	Body bruised in attempting to undermine a piece of coal that had been twice shot.
	30.	John Villinski.	"	24	S.	Mt. Vernon No. 5.	"	Jaw broken by a fall of top bone coal.
May	7.	Frank Gustavson.	Driver.	17	S.	Sommerville No. 4.	"	Leg broken by being run over by bank cars while attempting to take out sprags at the foot of the hill while his light was extinguished.
	8.	David Davis.	"	20	S.	Excelsior No. 4.	"	Fingers badly mashed while coupling mine cars outside.
	13.	Joseph Tralensky.	Miner.	40	M.	Eureka No. 2.	"	Back and shoulders injured by a stone which fell from roof.
	13.	John Ramsay.	"	45	M.	"	"	Foot bruised by a fall of roof.
	18.	Ephraim Sanderson.	"	50	M.	Pardee No. 3.	"	Knee dislocated by slipping off a rail.
	20.	Daniel S. Jones.	"	38	M.	Sommerville No. 4.	"	He was employed making ditch and he and his partner attempted to drill out a half stick of dynamite with drill and hammer; it came out suddenly, cutting him about face and neck and putting out his right eye.
	20.	Wm. Morris.	Miner.	50	M.	"	"	Bruised and cut about the groin by the accident above described.
	20.	Thos. McDermot.	Roadman.	..	..	Baltic No. 1.	"	Small bone of his leg was broken while attempting to get into an empty trip outside.
	24.	Archie Clark.	Miner.	16	S.	Gazzam.	"	Thigh bone broken by a fall of coal; he had neglected to sprag it.
June	2.	Gustave Anderson.	"	45	M.	Excelsior No 4.	"	Injured seriously about hips and head; he had just fired two shots in the coal on side of road in room for a cut-through and took up a car without sounding the roof, when it fell.
	4.	John Jackson.	Trapper.	14	S.	Pardee No. 2.	"	Leg broken by a car running over it; he fell while trying to jump from it.
	4.	Thomas Wilks.	Miner.	..	M.	Ocean No. 3.	"	Struck on hip with piece of rock and somewhat bruised
	20	Robt. Hastings.	"	30	M.	Brown.	Bedford.	Shoulder-blade broken by a fall of coal.
	25.	John Prosser.	"	24	M.	"	"	Leg broken and back seriously injured by a fall of slate.
July	6.	Chas. Anderson.	"	41	M.	Gazzam.	Clearfield.	Collar-bone fractured by a small piece of draw slate while mining.
	12	Samuel Johnson.	"	..	..	Alexander.	"	Small bone of leg broken while trying to stop runaway car that had been struck by a flying shot.
	14.	Abram Larson.	"	45	..	Eureka No. 2.	"	Internally injured by a fall of coal; no sprags set.
	22.	Grant Watkins.	"	25	M.	Montana.	"	Thigh cut and leg bruised by a piece of roof slate while attempting to take it down.
	26.	Michael Ciraka.	"	39	M.	Coaldale No. 3.	"	Badly cut about the face and head and badly bruised by a fall of slate from the edge of an eighteen-inch down-throw.
	30.	James Green.	Driver.	25	M.	Logan.	"	Foot bruised between cars by their having jumped the track.
Aug	1.	Thomas Kerr.	"	16	S.	Troy.	"	Small bone of leg broken; the front car jumped the track and his leg caught between them.
	.	Wm. Stone.	Miner.	24	S.	Washington.	"	Head cut and breast bruised by fall of coal; the coal had been blasted but had not fallen, when he went to undermine to further liberate it; he succeeded with the above result
	12.	John Larriez.	Driver.	26	S.	Columbia No. 5.	"	Leg broken by being jammed between cars, they having jumped the track.
	13.	John Myers.	"	30	M.	Pardee No. 1.	"	Foot cut by car jumping off the track.
	18.	Chas. Shankweiler.	"	21	M.	"	"	Foot crushed by being caught between car and rib of coal.
	22.	Wm. Gathagan.	Miner.	37	M.	Webster No. 4.	"	Badly hurt on spine by fall of middle slate that had not been properly timbered.
	25	Petrre Boshe.	"	38	.	Robertsdale.	Huntingdon.	Arm broken by fall of coal
	29	Samuel O'Niel.	"	37	..	"	"	Ankle bruised by top coal rolling over it.
	31	H. I. Cromwell.	"	30	..	"	"	Collar-bone broken by fall of coal
Sept.	3	B. McQuaite.	"	17	S.	"	"	Small bone of leg broken by top coal rolling over it
	8	George Matnua.	"	..	..	Victor No. 1	Clearfield.	Foot hurt by fall of slate in his own room.

TABLE V—*Continued.*

Date of accident	NAME OF PERSON	Occupation	Age.	Married.	Name of colliery.	Location—County.	Nature and cause of accident.
Sept. 9.	D. D. Goodyear.	Driver.	..	..	Victor No. 1.	Clearfield.	Leg broken; wheel on one of the cars broke and the first one jumped the track; his leg was jammed between them with above result.
11.	John Pilkerton.	..	21	S.	Coaldale No. 4.	..	Got his foot jammed between cars that he was riding on; his foot was badly cut and bones splintered, making a very bad and painful wound; a full car had been let away in a room and met him as he was going in.
15.	David Hess.	Miner.	28	M.	Robertsdale.	Huntingdon.	Leg, collar-bone and two ribs broken by fall of bone coal from the roof, due to careless propping.
25.	John Thomas.	Driver.	22	S.	Atlantic No. 1.	Clearfield.	Leg broken by being jammed between cars.
26.	John Bergen.	Miner.	30	M.	Pardee No. 1.	..	Collar-bone broken by a small fall of coal; it was too small to sprag, but he should have pulled it down
Oct. 14.	George Ellis.	..	..	M.	Decatur No. 1.	..	Ankle broken by piece of coal falling on it.
16.	Adam Hutchinson.	Driver.	24	M.	Atlantic No. 1.	..	Two fingers broken and hand mashed while making a coupling.
16.	John Onteo.	Miner.	35	M.	Pacific No. 1.	..	Compound fracture of leg below knee; caused by a fall of slate while mining on top; a slip came in the slate near which he was mining.
17.	Peter Spotts.	Driver.	26	S.	Drane.	..	Leg broken and ankle sprained by being jammed between car and post.
17.	Jabez Maloy.	Miner.	38	M.	Pardee No. 1.	..	Collar-bone broken by fall of coal; a slip which did not show in the mining came in between face and sprag; this piece fell on him with above result.
18.	Joseph Whiter.	..	35	M.	Mt. Vernon No. 3.	..	Leg broken; he was loading a car in front of a shot of coal which fell over and crushed his leg against the bumper of the car.
28.	David Richter.	..	36	M.	Cuba.	..	Collar-bone fractured by a fall of coal; he had no sprags to it.
31.	Dominic Belgum.	..	30	M.	Cambria.	Bedford.	Back and loins badly bruised; caused by a fall of roof; he neglected to set props in his place.
Nov. 4.	John Spencer.	..	20	S.	Cataract.	Clearfield.	Leg broken; he was riding on trip and was caught while the driver was trying to switch the car against next last car.
10.	Wm. Turnbull.	..	..	..	Baltic No. 1.	..	Bruised generally by fall of slate at face of his room.
11.	James Donahue.	Driver.	..	..	Prospect.	Huntingdon.	Foot badly mashed by loaded car running over it.
17.	John Micheals.	..	50	M.	Cataract.	Clearfield.	Ankle badly bruised by being jammed between cars.
18.	Micheal Minor.	Machine helper.	25	S.	Atlantic No 2.	..	Small bone of leg broken; he stumbled and fell in front of machine truck when moving it on main road.
19.	Michael Rowan.	Miner.	49	M.	Cambria.	Bedford.	Ankle badly bruised by fall of three and a half inches of roof slate; his "butty" knocked out a prop and released the slate.
26.	John McIsaac.	Driver.	27	S.	Cataract.	Clearfield.	Badly squeezed about the hips; he attempted to go between the cars, when his clothing caught on a large splinter on the prop and held him; the car caught him in that position.

Dec. 11.	George Wootchick,	Miner,		M.	Webster No. 4,	"	Was in the act of tamping a hole when the coal gave way and he was struck on the back by a piece of roof slate which came down with it, injuring his back (in the region of the loins) very seriously.
17.	Richard Mollihan,	"	45	M.	Bloomington No. 1,	"	Leg broken by a fall of coal; he did not sprag the coal as the mine rules require.
27.	Andrew Covelle,	Car shifter,	35	M.	Excelsior No. 4,	"	Arm and shoulder badly injured by being jammed between railroad cars while trying to make a coupling.
27.	Frank White,	Driver,	24	M.	Cataract,	"	Three teeth knocked out and superior maxillary bone fractured by the kick of a mule.
27.	Frank Emmerick,	"	35	M.	"	"	Kicked in the abdomen by a mule while trying to hitch it to the car.